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All photos by Mac L. Olds

JOHN WILLMIN
"Silver-gilt Standing Cup", 7½" height

Pair of Salt Cellars (Story of Acteon) Pierre Raymond (French, Limoges, 1550-1585) Enamels on copper. Lent by the Walters Art Gallery, Baltimore, MD.

Monstrance (Silver Gilt) Belguim—1560. Photo by A. J. Wyatt. PHILADELPHIA MUSEUM OF ART COLLECTION

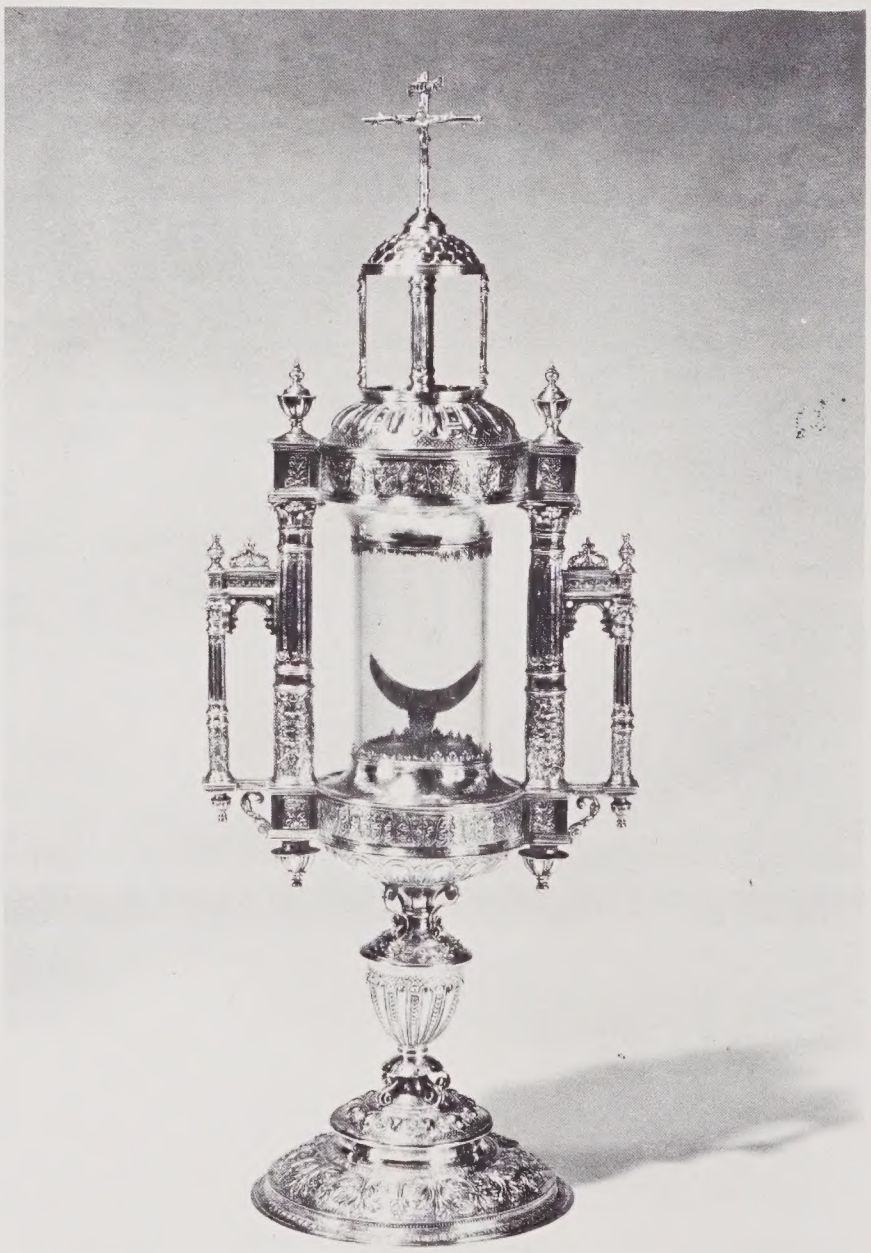
INTRODUCTION "TRIUMPH OF HUMANISM"

by D. GRAEME KEITH

(Editor's Note: This introduction was written in conjunction with this exhibit.)

"When evening comes, I return home and enter my study: and on the threshhold I doff these everyday clothes of mine, all mud and filth, and don royal and courtly robes; and thus decently attired, I enter the ancient courts of ancient men, where, lovingly received by them, I nourish myself with the food that alone is mine and that I was born for. And I am not ashamed to talk to them and enquire after the reasons for their actions, and they, out of all humanity, answer me; and for four hours I feel no boredom, I forget every worry, I don't dread poverty, nor has death any terrors for me; I transfuse myself entirely into them." (Quoted in translation from a letter of Niccolo Machiavelli to Francesco Vettori, December 10, 1513).

The period covered by our exhibition, from about 1425 to 1600, can be divided into three phases generally described as the Early Renaissance (ca. 1425-1480), the High Renaissance (ca. 1480-1525), and the Late Renaissance or Mannerism (ca. 1525-1600). In northern Europe the Early and High Renaissance styles occur later than in Italy and last for a much shorter time. The decorative styles characteristic of these periods developed gradually, but when they became fully crystallized, they displayed distinctive qualities. Through all three phases, however, there runs a common thread which connects them with the ancient classical world and its literature, philosophy, and art. This passage also reveals his desire — a desire shared by his contemporaries — to identify with the men of the classical past and to model his life, thinking, and moral behavior on theirs. In the exhibition and in the catalogue we seek to demonstrate the influence on the decorative arts of this renewed interest in the classics as an integral part of the broader scene of artistic achievement during the Renaissance.

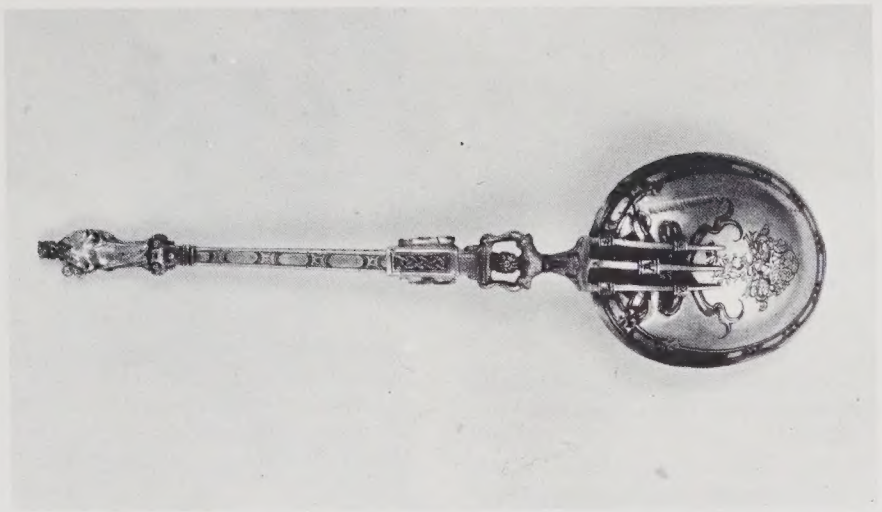


Stimulated by the recovery of Greek and Latin literary masterpieces lost during the Middle Ages and by the influx of Greek scholars into Italy after the fall of Constantinople, the study of the classics, known as humanism, opened men's eyes to the impressive stature and accomplishments of the great men of the classical past. This knowledge, conveyed in poetry and prose of uncommon beauty, served to restore man's sense of dignity and self-esteem and liberated him from the spiritual confinement imposed by a church which stressed man's unworthiness, dictated a stereotyped view of the natural world, and urged him to disdain that world and its pleasures.

The Early Renaissance was a period of learning, assimilation, and codification of the principles of classical art and their application to the contemporary scene. It was a rare period of comparative intellectual tranquility during which people believed that they had rediscovered aesthetic laws that were eternally valid. They sought to create and surround themselves with works of art which would associate them with their admired ancestors in the classical world. Architects began to comb ancient Roman ruins which lay all about them, long forgotten and so little understood or appreciated during the medieval period that they were often used as stone quarries to provide materials for the construction of new buildings. They made measured drawings, sketched, studied, and absorbed the spirit and the letter of what they saw. They studied Vitruvius, the only Roman architect whose writings had survived, seeking there and in the monuments themselves the secrets of the laws of proportion in which the beauty of classical architecture seemed to lie.

The humanists who had sponsored the search for and who had themselves collected classical manuscripts were also collectors of other classical antiquities. The collections they formed included marble sculptures and reliefs, small bronzes, coins, cameos, and intaglio-cut gems. Indeed, the collecting of antiques and of contemporary bronzes in the antique manner was one of the marks of a man of culture. The demand for bronzes, which included sculptures and medals as well as utilitarian objects of contemporary use such as doorknockers, candlesticks, mortars, incense burners, and a multitude of small boxes and inkwells, was supplied by sculptors working in the studios of Florence, Mantua, Padua, Venice, Rome, and a few centers north of the Alps. As was the case with the surviving examples of Roman architecture and sculpture, the small antique objects assembled in these collections were studied by artists and craftsmen and influenced the form and design of many Renaissance objects. Besides bronzes, these included the output of the workshops of armorers, goldsmiths, jewelers, cabinetmakers, metal engravers, ceramists, enamellers, and bookbinders.

The exhibition contained a number of bronzes known to be based on objects which once belonged to Renaissance collectors. Among these was a bronze plaque made from a mold taken from a famous Roman cup, carved from sardonyx, which once belonged to the great Florentine humanist, Lorenzo de Medici.



Combined Folding Spoon with Fork and Toothpick. Flemish (Tournai), dated 1562, Silver parcel gilt.
Lent by Victoria and Albert Museum, London.

THE TRIUMPH OF HUMANISM

The exposure of Renaissance artists and craftsmen to the literature and the artistic remnants of the classical world affected both the narrative content and the forms of the objects of utility and decoration: in content through the common use of classical subjects, and in form through a classical treatment of the human figure and the adaptation of classical shapes and ornamental devices. Even in the case of objects made for ecclesiastical use where the subjects would be Christian, the classical forms prevailed.

A wealth of classical subjects was used to decorate objects coming from workshops in every branch of the decorative arts. Examples in the exhibition included many versions of the *Labors of Hercules* executed in bronze and silver. Scenes from the lives of the Greek and Roman gods and heroes were commonly depicted in the engravings used by craftsmen as sources of design. They also appeared on painted majolica and enamels and were engraved, etched, and embossed on metal from the workshops of armorers and goldsmiths, in addition to being embroidered on textiles. The Renaissance designer also drew upon a host of lesser classical figures and devices — satyrs, putti, sphinxes, masks, herms, medallions, trophies, scrolls, acanthus leaves, Roman lettering, and other motifs derived from antique sources.

These themes and motifs were assimilated by Renaissance artists and craftsmen and became a part of the vocabulary of all of the visual arts. They were portrayed in numerous engravings produced first in Italy and later in great abundance in northern Europe during the Mannerist period. The makers of these engravings reflected and, to a considerable degree, influenced the changes in style as they developed during the Renaissance. They were also important because they facilitated the dispersion of the knowledge of classical ornament throughout Europe and, through engraved versions, made many paintings by the great masters of the period widely familiar. The designers and engravers of these prints also turned to monuments for inspiration. But once the classical vocabulary was understood, these designers began to introduce variations of their own invention to make them entirely their own. To this early period belong the delightful "pilaster" and "trophy" ornaments by designers in the circle of Zoan Andrea and Nicoletto da Modena.

A Roman monument which was of special interest to the period was Nero's *Domus Aura* (Golden House) which contained in its buried rooms charming examples of Roman decorative painting; the Renaissance designs based upon them came to be known as "grotesques" (as the originals which inspired them were found in underground rooms, or grottoes). Variations of "grotesque" designs contined to come off the presses of the engravers during the Renaissance and subsequent centuries and were used as major sources of design again and again by artisans in all the decorative crafts. A particularly rich and varied output of these engraved ornament prints occurred in France and, a little later, in other countries of northern Europe. The court of Francis I at Fontainebleau, where important Italian artists including Primaticcio (1504-1570) and Rosso (1494-1541) were employed by the French king, played a leading role in the development and dissemination of the Mannerist style in both the major and minor arts. These Italian artists were engaged not only to decorate the king's palace but also to establish workshops where northern craftsmen in all branches of the decorative arts could be trained in the essentials of their craft and the principles of the new Mannerist style. Typical of these was Jacques Androuet Du Cerceau, a French Mannerist architect and engraver who produced many suites of ornamental prints. He described their intended purpose on one title page as to "serve goldsmiths, painters, stone cutters, cabinet-makers and other artisans to awaken their fantasy and apply each to his art whatever he finds appropriate."

The repertoire of Renaissance graphic design was supplied not only by architects, painters, and sculptors of the first rank, such as Donatello, Verrocchio, Mantegna, Raphael, Michelangelo, Primaticcio, Rosso, Holbein, and Durer, but also by a host of talented and inventive followers. Several Renaissance goldsmiths, for example the great Nuremberg goldsmith Wenzel Jamnitzer, were also active in the production of graphic designs. The exhibition included a number of ornament prints and drawings which indicate the manner and universality of their use by craftsmen in every branch of the decorative arts.

There were other interests not connected with the classical world which had an influence on the decorative arts of the Renaissance. Among these was a fascination with the natural world, which at this time began to be seen with new eyes. Boxes, inkwells, and small sculptures in the form of crabs, frogs, and lizards appear frequently in late fifteenth-century bronzes and in goldsmith's work of the Mannerist period, as well as in the ceramics of Bernard Palissy (ca. 1510-1590) and his followers. There was also considerable influence from the arts of the Middle East, which reached Italy and other parts of Europe through Venice and Spain. The "Mauresque" or "Arabesque" was a form of Islamic ornament which appeared frequently in ornament prints and, through them was successfully adapted and combined with classical elements by goldsmiths, armorers, bookbinders, ceramists and textile workers.

Bronze Wall Fountain: Neptune
Italian (Florence) 1560-70.
Lent by The Toledo Museum of Art.

"THE TRIUMPH OF HUMANISM"
CALIFORNIA PALACE OF THE LEGION OF HONOR, San Francisco, October '77 to January 8, '78
Reviewed by WALTER SOELLNER,

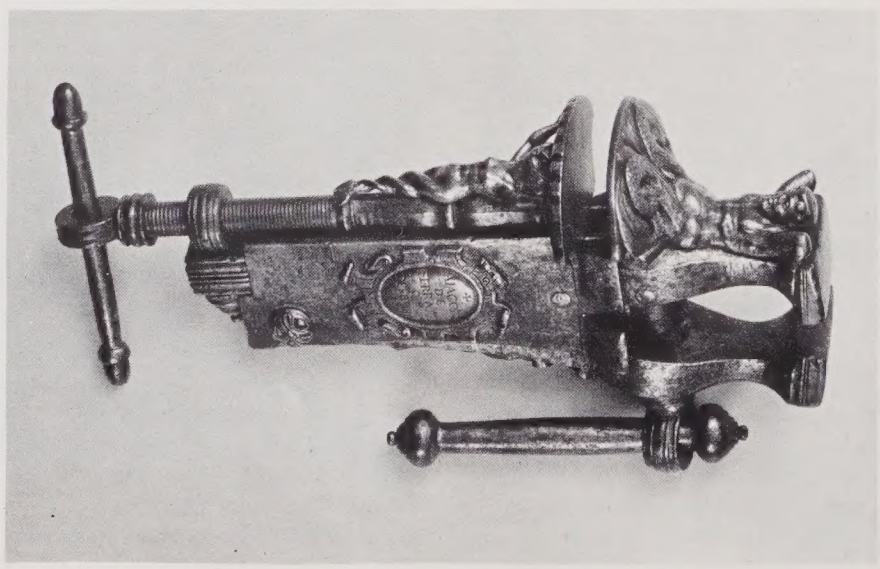
Celestial Globe with Clockworks.
Gerhard Emmoser, 16th century.
Austrian (Vienna), dated 1579, parcel-gilt silver and brass.
Lent by the Metropolitan Museum of Art.

Metalsmithing in all its dimensions could be found among the dazzling objects collected for exhibition in "The Triumph of Humanism" exhibition that was on display at the California Palace of the Legion of Honor Museum (one of the two fine art museums of San Francisco).

What a delightful surprise for me to find this major exhibition of Renaissance art on one of my first trips into the city after accepting a metals position at Evergreen Valley College. The exhibition was held through Jan. 8, 1978, and did not travel.

The visual survey of the Decorative Arts from 1424 to 1600 in Europe, had been in the planning stages for half a dozen years, by D. Graeme Keith, curator in charge, Dept. of Visual Arts, Fine Arts Museum of San Francisco. It was both the culminating effort of Mr. Keith (who retired the week of the opening), and a tribute to his dedicated service in the interests of the arts. His sensitive selection of pieces to represent well-known artisans of the time, the varied types of objects displayed, and the thorough coverage of the major evolving stylistic mannerisms of the Renaissance, combine to give us an in-depth look at one of the great periods of human creativity.

Visitors in general, and goldsmiths in particular, enjoyed some especially unique objects — such as the Celestial Globe with clockworks, made by Gerhard Emmoser for Emperor Rudolph II, Vienna, 1579 (see illus.). It was on loan from the Metropolitan Museum of Art, N.Y.C. (This was one of a number of pieces hand carried across the country for this exhibition.)



Armorer's Vise, signed Jacopo de Ferrera. Iron, Italian, 1588.
Lent by the Metropolitan Museum of Art.
THE TRIUMPH OF HUMANISM

Another unique piece of special interest was the Armorer's Vise, made by the Italian Jacopo de Ferrara, 1588, also from the Metropolitan Museum of Art (see illus.). The aesthetic care with which even the tools were made reminds me of a number of contemporary craftspeople who find great satisfaction in fabricating aesthetically viable hand tools that are a joy to see as well as use.

A humorous piece in the form of a shoe called, "Welcome Cup From a Shoemakers Guild" (appropriately made of leather and silver), was German, 1550-1575. It was lent by the Francis E. Fowler, Jr. Foundation Museum, Beverly Hills. CA (see illus.).

A final piece I will mention was the spectacular Parade Shield of Henry II of France (see illus.). It is steel, etched, chased and engraved with a multiplicity of forms, scenes, and characters in a Surreal imagery that belies its 1555 origins.

The exhibition included a small, but select group of jewelry as well as chalices, cups, tazzas, plates, and salt cellars, daggers, rapiers, armor, a mace and a war hammer. There was also a prominent display of metal fabricated time pieces and other scientific instruments.

Another section of the show was devoted to bronzes in the form of pure sculpture, as well as inkwells, writing boxes, candlesticks, lamps, incense burners and doorknockers. Enameled pieces included jewelry, salt cellars, candleholders, and an especially beautiful table top casket with enameled panels of Hercules, lent by the Walters Art Gallery of Baltimore. Furniture, glass, textiles, graphics, bookbinding and ceramics also represented the period in this display.

The installation was well done, in spite of the large number of pieces for the space available, although the lighting was poor on some pieces — too much glare and not enough soft lighting to illuminate the subtle surfaces of some items. However, I especially valued the descriptive 'anecdotal' cards that accompanied most pieces.

Welcome Cup from a Shoemakers Guild. German, 1550-1575. Leather, silver.
Lent by the Francis E. Fowler, Jr. Foundation Museum, Beverly Hills.

A slide/recorded program added background enrichment to the whole presentation and was repeated hourly. A scholarly catalog — really a soft bound 95-page book — illustrated with both black and white and color photos of select pieces is available for $7.00.

We contemporary metalsmiths have a tendency to sometimes think of ourselves as great innovators of technique, or materials, or even aesthetic outlook. Experiencing an exhibition like "The Triumph of Humanism" can awaken our awareness of past accomplishments and possibly put our own efforts and achievements into a more balanced perspective. Finally, it is through the efforts of men like Mr. Keith and his assistants that artists and craftspeople of every age can both share their labors and insights, and be refreshed and renewed in the humanist continuum.

Parade Shield of Henry II of France. Steel, French, ca. 1555.
Lent by the Metropolitan Museum of Art.

George Martin, "Menorah," steel and brass
All photos by Mac L. Olds

SOUTHERN CALIFORNIA DESIGNER CRAFTS EXHIBITION

by Hallie Katz

Paul Huntoon, Neckpiece, bronze

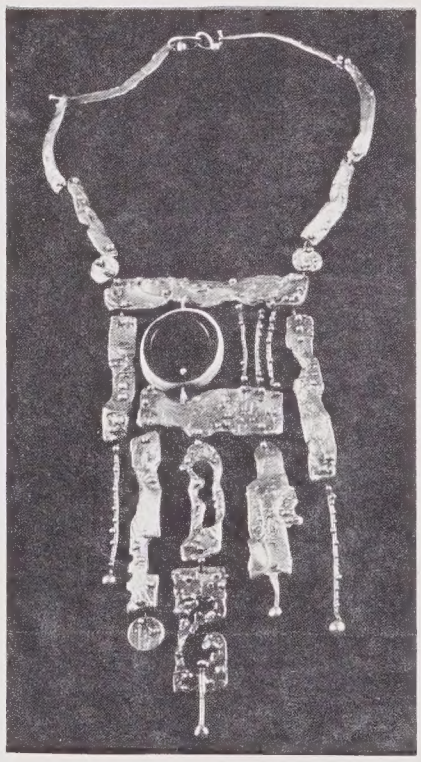
SCDC EXHIBITION

Southern California Designer Crafts recently celebrated its 20th anniversary with a major juried show at the Brand Library Art Galleries in Glendale, California, December 31-January 31. SCDC is an organization that serves the needs and interests of many of the professional artists and designers in Southern California who are involved in all media. Regularly scheduled and special meetings provide an exchange of information on issues such as producing, teaching, exhibiting, and marketing, in addition to slide programs, lectures, and panel discussions.

The entries were diverse from the more than 180 member organization, with the heaviest concentration being textiles and fiber arts. Each member was invited to enter 1-3 items. The juror was Jerry Samuelson, Dean of the Art School at Cal State Fullerton. Approximately 70 works out of 170 were accepted for the show.

The main gallery at the Brand Library is 87x32½', a wide open, brightly lit space, with an adjacent open-air sculpture court, and a foyer gallery. The glass and concrete building was added to the existing library in 1969 to accommodate many activities pertaining to the arts and music. The Brand Library itself is a multi-story mansion built in 1904, a crisp interpretation of Spanish, Moorish and Indian style of architecture, while the interior follows the Victorian decor. The house was bequeathed to the City of Glendale by Leslie C. Brand to be used exclusively for a public park and library, and has been serving the community since 1956.

The Brand Library Art Galleries was really an appropriate place for the SCDC exhibit because of its interest in Southern California artists. Directed by Mr. Burdette Peterson, the gallery has shown international and national artists, but usually exhibits the work of local artists, many of whom contact him. Shows at the Brand are scheduled 1½ years in advance.



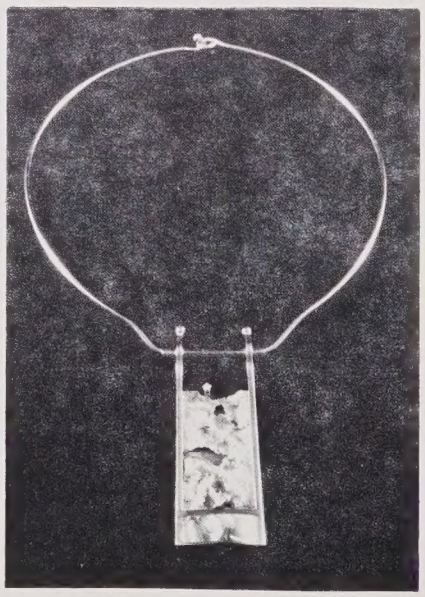
Although the exhibit was extremely professional looking, it was not totally representative of the diverse talents of the members. As mentioned before there was an abundance of fiber arts, also several sculptures, a small selection of ceramics, no wood at all, and only 13 pieces of jewelry from 9 artists (approximately 37 jewelers had entered their work). The judging was based on innovative use of materials, success of design, and beauty, albeit geared to the juror's personal taste.

The metal work covered all conventional techniques, and traditional designs to the most modern, from a simple cast gold ring set with fire agate and pearl by Paul Huntoon, to a sophisticated sterling collar made by Brigid O'Hanrahan Jones, inlaid with acrylic. Transparent and opaque yellow acrylic sheets had been laminated together to give a striped effect, the piece then heat formed to follow the curve of the fabricated neckpiece. My own entry, with which I was fortunate enough to be represented, was executed with traditional fabrication methods and materials, but stood on its own when judged for integrated design. The sterling neckpiece combines a reticulated element, much like the craggy terrain I would imagine on a planet in outer space, framed in with an inlaid piece of sculpted abalone. A small diamond overlooks the whole with subtle starlike brightness.

Two antique carved ivory flowers project on silver stems above a contrasting bracelet formed of large hard-edge brass leaves that encircle the wrist by Vittoria Cozzi-Olivetti. Elsie Deitz also achieved an effective contrast in her fabricated and cast neckpiece by extending a sculpted flower-like pendant holding a Mexican opal from a wide satin finish sterling collar. Walter Jaeger's modern adaptation of an Egyptian scarab ring was neatly fabricated from 14k gold sheet, with pierced hieroglyphs on the band supporting a gold scarab high in the air. Having made a mold from an actual stone scarab, Walter was able to reproduce the beetle in solid 14 karat.

Two pieces in which color played an important part were Sylvia Falkove's champleve enamel pendant with soft colors accentuating its silverly butterfly wings, and Brigid O'Hanrahan Jones' hollow constructed brooch of sterling and carved red striped acrylic. In the butterfly pendant a more traditional technique of color application seems natural, and although some transparent enamel was used to create depth it is basically a two-dimensional effect, while the thick laminated acrylic material stuffed into a fat boxlike form in the brooch is a very exciting adaptation of a new substance, not only because of its freshness of color, but because of its sculptural quality. Brigid, by the way, has been fortunate enough to study with Arlene Fisch and Helen Shirk at San Diego State University, and recently received a California Arts Council Grant for experimental work.

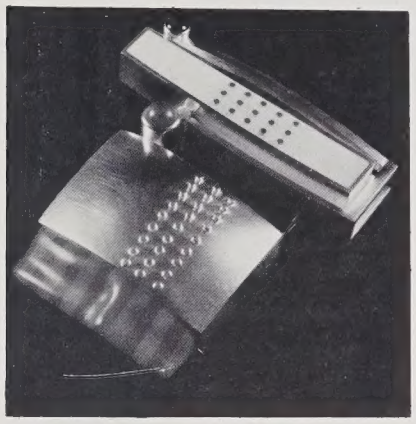
Walter Jaeger, Scrab gold ring



Many of the SCDC members are not so lucky as those who are able to study for many years with well known professors and receive grants for their proposed creative endeavors. For many of us our main concern is to make high quality, yet functional and saleable items in order to survive. We are working professionals out in the real world. We are not sheltered by the university, nor are we allowed to indulge in such luxuries as free creative time, although that is a common dream. In view of this I would like to suggest an alternate solution to the selection of a membership exhibit such as this. Perhaps there could be two categories, both juried, of course. In the first category, the working craftsperson can be fairly represented. The work should be judged by the usual standards of quality, beauty, and technical skill of the artist. These people who support the organization, (and often times are much more active than artists with more know reputations), are making a valid attempt to educate the public in its acceptance of art and craft as a part of daily life,

Hallie Katz, Silver Necklace

Brigid O'Hanrahan Jones, "Red Brooch", acrylic and silver



THE PHILADELPHIA CRAFT SHOW

BY SYBIL ROBINS

which in turn, provides a foundation for public interest in more sophisticated art forms. In the second category work could be judged on its innovative quality and design impact, as well as technical achievement. This category is for those who choose to do "show pieces," and who are moved to create fantasies of the mind in a competitive spirit, without regard to function or the buying public. This system would not be unlike California Design's two part exhibit held here every 3 years. They have one category for commercially manufactured products, and a separate category for unique and one of a kind offerings, produced by the individual designer.

Although the Brand exhibit was an excellent show in many respects, it had its limitations, and there are those who will be dissatisfied with the outcome of any competition, but perhaps next time the exhibit will be approached with a slightly different outlook. After all, we must work together to achieve our goals in every day reality AND our dreams, because without BOTH there is an imbalance.

The Philadelphia Craft Show, sponsored by The Women's Committee of the Philadelphia Museum of Art was held at Memorial Hall in Fairmont Park, Philadelphia, November 3-6, 1977. Mrs. Joan Mondale was guest of honor at the opening cocktail party and toured the booths of exhibiting craftspeople with great interest.

The show was organized in three parts. Part I was a juried craft show of 100 exhibiting craftspeople whose slides were juried by a selection committee comprised of craft organization and gallery administrators and craftsmen representing all media, including goldsmith Bob Natalini.

Several participants in this phase of the show were selected by Elena Canavier of the National Endowment for the Arts to receive awards of merit. An award was also presented for the best booth design. Designer/metalsmith Pahaka of New Jersey won a second prize cash award for her work.

Also outstanding among the metalwork in this portion of the show were chunky bracelet and pendant designs of human and animal profiles in silver by Jaclyn Davidson, bold linear inlays of ivory and ebony on massive neckpieces by Donald Pywell, and softly lyrical cloisonne pendants in muted hues by Ginny Whitney.

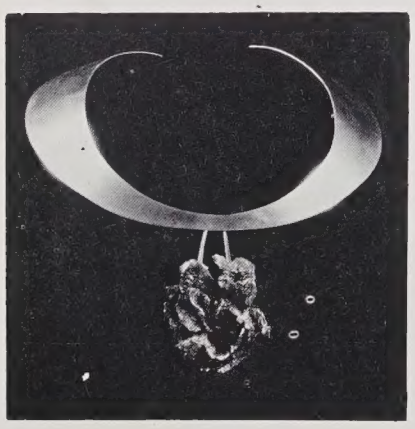
Part II was titled "Wearables," and consisted of an exhibit of 40 pieces of wearable body adornment, primarily in fiber.

Part III, "American Crafts 1977," was a formal exhibit of work by 75 craft artists, each of whom was invited to send one or two pieces, which were on view at the Museum's sales and rental gallery for the month of October, and subsequently transferred to Memorial Hall for the duration of the Philadelphia Craft Show. Memorable among the metalwork in this group are a sinuous weathervane sculpture of forged mild steel by Brent Kington, and a neck collar of gold and pearls by Glenda Arentzen.

Attendance for the 3½-day event has been estimated at 12,000 people, and many exhibitors reported an interested and appreciative, though not terribly knowledgeable audience.

Pahaka, flying pin of polished and textured sterling and black onyx, height, approximately 4".

SCDC EXHIBITION
Elsie Deitz, Silver Collar



MID AMERICAN METALCRAFTS '77
by John Scott, Jr.
(Reprinted by permission of Mid American Crafts Exhibits, Inc., 1005 Indiana St., Lawrence, KS, 66044, phone: 913/842-3350.)

Marjorie Schick, "Finger Sculpture", sterling (photo by John Scott, Jr.)

Glenice Matthews, "Amphritrite's Pectoral", sterling, coral, quartz (photo by John Scott, Jr.)

MAM '77 is thankful to the Missouri Arts Council for the financial assistance rendered for this exhibit.

Mid American Metalcrafts (MAM) is designed to further the understanding and appreciation of crafts in general by teaching visitors some basic metalcrafts ideas and techniques. The main theme we mean to develop is one of unity between crafts tradition and history, crafts processes, and crafts products.

The history of jewelry and metalsmithing in the United States extends back at least to the Jamestown settlement of 1607, and forward in an evolving tradition to the present day. Claims that silversmithing in America started only thirty years ago are remarkable in the face of this tradition. The postwar years certainly saw the introduction of very creative new kinds of art education — because of immigration — and there has been an increased emphasis ever since on design ideas from Europe. Even so, nothing is gained by disregarding an existing tradition, one which had itself always freely adapted the best design fashions.

Until the early twentieth century, American jewelers and silversmiths were trained in apprenticeship systems derived from seventeenth-century European models. Certain remnants of these systems still operate today for the training of craftsmen in the jewelry trades and some types of silver manufacture. Today, however, many of those whom we regard as independent craftspeople, are trained in colleges and universities.

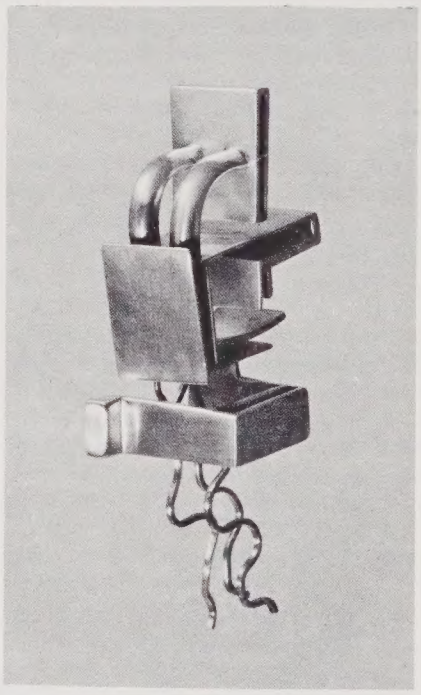
Partly because they are not the traditional jewelers and silversmiths, these craftspeople must bring a great deal of creativity to their work. Many are involved in developing new crafts traditions, which reflect past and existing orders. As the first generations of academic designer-craftspeople fill most teaching positions, more recent arrivals are entering the world of production. While the artwork of many reflects the entry of academic designer-crafts into the sphere of the fine arts, most creative new craftspeople are exploring the harmonious integration of both practical and expressive qualities of the modernist tradition in their crafts. Interest is growing in the potential of using new forms of apprenticeship to train and bring together the numbers of craftspeople required to do substantial amounts of work. Cooperative workshops also help establish the personal interactions and exchanges of ideas that characterize vital learning and growing processes.

These craftspeople are contributing directly to an upsurge of public interest in crafts. Americans are using crafts products of all sorts with a new kind of enthusiasm — not because of economic comparisons to industrial products, but rather for reasons of qualitative and aesthetic preference. Today more than ever, people need to personalize and humanize their environments, and we look to our craftspeople for objects and designs to begin this process.

Mid American Metalcrafts (MAM) is an annual educational exhibition of fine artwork from craftspeople who live and work in Kansas or Missouri. The only exhibition of its kind in the region, MAM is not a competition, nor is the collection for sale. Rather these crafts products have been selected for display primarily as representations of the exhibition themes: crafts quality, crafts technique, crafts tradition, and crafts trends. The works on display are some of the region's best in metal and related materials. The exhibition combines fine artwork with visual information on metalcrafts tools and techniques, and on metalcrafts from many different cultural traditions and historical periods. Because the exhibition takes place in Kansas City, Mo., Public Library, it is designed to stimulate people to a deeper investigation of crafts, an investigation which might begin in the library's book collection.

Just as public interest in crafts has developed rapidly over the last decade, so the need for reliable and challenging sources of crafts information has intensified. Mid American Crafts Exhibits, Inc. is a non-profit educational organization which produces events like Mid American Metalcrafts in order to increase public understanding and appreciation of crafts.

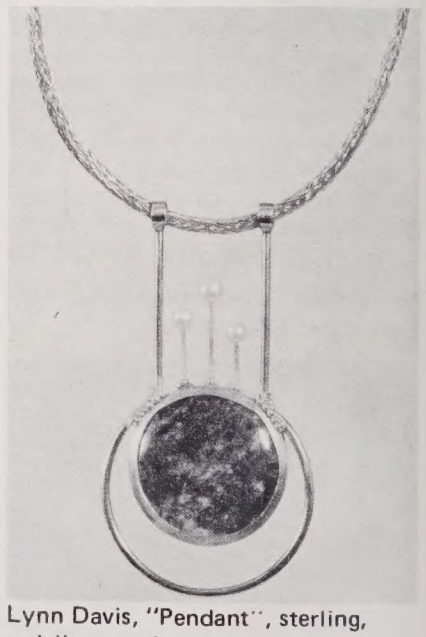
The Mid American Metalcrafts collection for 1977 includes a wide range of jewelry and silversmithing products. Each piece fits at least one traditional category, the body ornament or the container. Each extends and enlarges a tradition by adding to the range of possibility. Many project tradition into the future, utilizing modern and futuristic materials such as plastics and



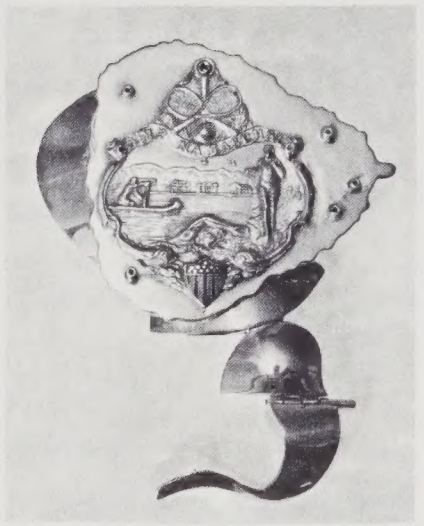
technologies like electronics. All affirm the continuity and lasting importance of the craft with strong innovation and use of both ancient and modern vocabularies. Neck and chest ornaments, and the lidded box or container have been especially important for contemporary work. The development of these two types has very often been closely involved with the development of vitreous enamel techniques for surface decoration. In order to gain insight into the contemporary metalcrafts of Kansas and Missouri, and through our region into national and international trends, we can look at the MAM '77 collection in terms of three categories: the container, enamelwork, and the neckpiece.

Enclosing and articulating space has always been the craftsman's task. The shapes and decorations of containers often become symbolic of contents. In the manufacture of their lidded containers, metalsmiths employ highly refined skills. Not only must the container correspond to contents, but the device itself must function. Hinges must move smoothly; cathes must hold securely and release easily. The lid must fit. A container must have physical balance to stand up straight, lie down flat, rest solidly on its base, or hang well on belt or cord. These make-or-break criteria have guided craftspeople since the very earliest times. Today they underlie highly individualized container imagery.

Overlapping hinged brass, silver and copper plates top a lid on one of Charlene Read's intriguing containers. The many-textured vanes in varied patinas bring plastic mobility to the strongly modelled surfaces of the container body. These sculptured compositions involve fine control of textural and coloristic surface decoration. Similarly, the works of Lee Hageman show mature refinement of style and technique. His are perhaps the most elegantly conceived boxes in this collection. An earlier lamp and a coffee service provide perspective on his more recent container forms. The earlier polished surfaces contrast with the dark texture of a pencil box which asserts its tall shape, not reflecting its surroundings. A sinuous cord moves up one side, curling like wrought iron to form a handle on top. This is perhaps the collection's most subtly beautiful container, due to monumentally simple form and exquisitely tasteful decoration. Hageman has integrated practical and expressive functions in this object. Removing its top, we find that his box holds pencils. Crafts products like this take their places in many contemporary settings, and are not limited to walls or display shelves. Rather they join people at desks and tables (or in other work and leisure locations). There they help very directly to humanize the events and routines of everyday life.



Lynn Davis, "Pendant", sterling, sodalite, pearls
(photo by John Scott, Jr.)



MID AMERICAN CRAFTS
EXHIBIT '77

Jane Slimon, "Camp Nanaschaug",
brass, sterling
(photos by John Scott, Jr.)

Containers by Kenneth Millsap and Jane Slimon follow this humanistic trend, while Virginia Julyan's fine "Marriage of Metals" works emphasize more a concern for technical composition, colorism and surface treatment. Even so her very sculptural integration of hard, angular shapes with flowing organic forms speaks to the urgency many contemporary artists feel for the reconciliation of opposing elements of existence into more human forms. Millsap and Lynne Davis carry on a long and varied tradition of mounting enamelled plaques like jewels on containers. Davis' lyric composition tops a turned walnut box, while Millsap's sterling container wears a more whimsical composition on its close-fitting cover.

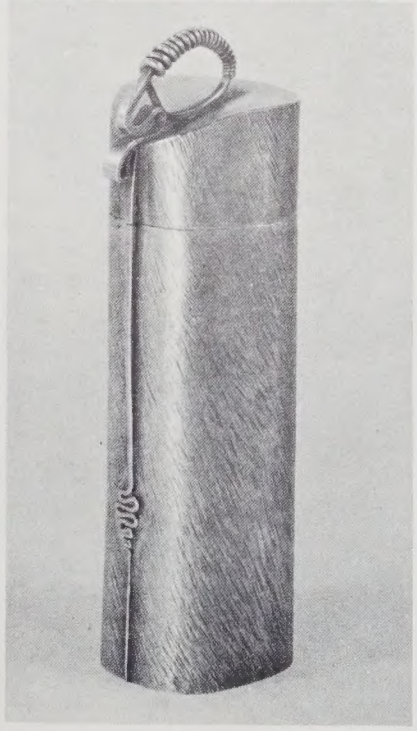
Michael Gleason's enamelled works open up a captivating realm of talismanic power. Often strongly organic, his forms integrate 'cloisonne' or 'en ronde bosse' enamel elements with materials both traditional and modern. His ornaments belong on people, embellishing and interpreting mood and personality, combining with wearer form and vestment. Rhoda Snedecor's jewelry tends to emphasize organic motion; she often uses layered, interpenetrating images and modernist designs as well. Her neckpiece combines subtle enamel elements with metal and plastics for striking effect.

Contemporary jewelers spend a great deal of attention on decorating neck and chest areas of the body. 'Neckpiece' has become the most common term to denote works based on traditional pendant, chain, choker and necklace forms. These "neckpieces" become a specialized kind of small sculpture that uses the human form itself as an expressive element. (Of course very similar things are happening across the entire range of traditional crafts forms. Marjorie Schick's powerful finger sculptures show this trend applied to the finger ring.) Neckpieces are popular today and our collection contains more of them than of any other single type of work. Great diversity and invention in this category attests to the vigor and range of metalwork in our region.

Glenice Matthews' strong evocation of Poseidon's sea-nymph wife, "Amphritrite's Pectoral" really stands in a class of its own. Her bold design embraces simplicity while establishing clear three-dimensional presence. Broad and plastically articulated, the crescent alludes to shell structures being developed in the St. Louis workshop Matthews entered last Fall, while a natural coral form provides a formal and expressive balance those structures often lack. Coral creates a clear reference to the sea, justifying the title. Glenice recently began teaching in the University of Kansas Department of Jewelry and Silversmithing.

Dan Dakotas' highly decorative and beautiful necklaces integrate structure and ornament. Working metal into rather sculptural bases, he extends it with concretions of wood, leather, shell, beads, and feathers. His organic imagery is often pierced by more graphic symbols like applied metal shapes, beaded patterns, and even photographic images. These neckpieces hang on softly colored cords of flat shell beads, creating subtly powerful effects.

Neckpieces from this central United States region tend to combine very basic expression with ornamental function. Most avoid contemporary trends toward visual heaviness, attempted monumentality, and self-conscious intricacy of detail. Miriam . Joelson's rosewood and sterling pendant expresses unfolding, birth, revelation. A soft, bright agate appears in the darkness within gently curling lips, symbolizing increasing expressive impulse and a loosening of restraints. Dark surfaces and patterns in Kenneth Millsap's chain and pendant establish a mood of reserved power. His well-controlled works sample a range of metalcraft form and technique. Shirley Hurt's clear style shows a mature flexibility in her approach to jewelry. Her silver and pearl pendant might be viewed together with Joelson's as an allusion to human form, expressing feminine viewpoints through its shape. Another such neckpiece is Virginia Julyan's rather biomorphic composition which shows similar human symbolism. These artists work sculpturally and coloristically to create metalcrafts expression in forms with understandable meaning. They achieve communication; they affirm their craft. They make visual lucidity a major factor in their art. These feelings and this approach characterize Mid American craftspeople and their products.



Lee Hageman, "Pencil Box", pewter
(photo by John Scott, Jr.)

Contemporary American craftspeople often start out in schools, learning design principles along with basic crafts techniques. Others train with established craftspeople in businesses and workshops or in trade schools. Whatever their backgrounds, artists not working for established institutions or industry as teachers, designers, or production workers inhabit pretty much the same crafts scene across the country. Most important in this crafts situation is the marketplace, where independent craftspeople and groups sell their wares and services. Market factors affect every aspect of the crafts lifestyle.

"Success" can generally be described as confidence and control in dealing with markets. To understand the American craftsperson, one must first understand how s/he sells crafts products and services.

How do craftspeople sell? A working craftsperson maintains an inventory of goods and useful skills which are available for purchase and hire. Production and pricing are geared to specific methods of selling. Generally speaking, these are the art fair or a similar mass cultural event, art gallery consignments, wholesale market sales to retailers, and the direct retail crafts business.

Probably the best and most attractive method, when circumstances are favorable, is the direct retail crafts business. Here design services, made-to-order work, ready-made work, and repair services are sold directly to consumers by craftspeople. The keys to success here are hardheaded business sense, sales ability, determination, and adaptability, in addition to technical skill and proficiency in the craft. The next best option is a wholesale relationship with established retail outlets and distributors. Retail buyers attend regional trade fairs, as do wholesaling craftspeople. By wholesaling, craftspeople maintain the cash flow needed for fiscal survival, and continually move their stock in trade out into the market. They spend less time selling and more time in the workshop, in comparison with retailing craftspeople.

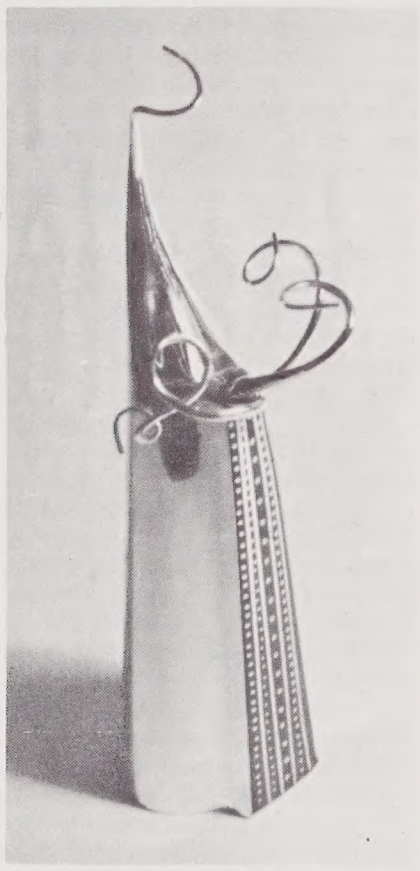
Another common method of selling is to allow art galleries to show crafts works to their clients on a consignment basis. If and when the art sells, the gallery collects a commission. Dealers and other exhibitors of art should protect themselves and their artists with insurance, but they seldom assume this expensive responsibility. Thus the entire burden of investment and risk falls squarely upon carftspeople. The attractive feature of the good art galleries is their ability to sell important artworks at considerable prices.

Probably the least ideal aspect of the crafts marketplace is the ever popular and ubiquitous art or crafts fair. Experience teaches that crafts fair crowds are most attracted to the least expensive art, although there are occasional major purchases. Therefore craftspeople, especially in metalcrafts must exert tremendous energy in developing worthwhile, attractive art at low cost. Other drawbacks to the art fair arrangement can be unfriendly weather and relations with fair organizers and sponsors. Despite problems, the fairs attract craftspeople. One reason is that buyers for retail often attend. Another is the system of prizes awarded at most art fairs. Fairs also bring together craftspeople from widely separated areas. Most craftspeople in this area make art fairs a part of their business, but do more business in the retail and gallery markets. As institutional teaching of crafts becomes a less available option, crafts business seems a logical means for survival and growth.

GOLDSMITHS INVITATIONAL/ YEATTS GALLERY, ROANOKE, VIRGINIA

by ANN WEINSTEIN

Gabriel D. Ofiesh II, silver and plexiglass pendant, photographed by H.G. Miller III



One of a number of brilliant exhibits offered by the Yeatts Gallery, Roanoke, Virginia, and the first in a series featuring the work of goldsmiths, PURE GOLD! may have been an historic event.

The first statewide goldsmiths invitational in Virginia's contemporary history, it was very possibly the first the state has ever seen.

The title of the show described more accurately than the materials used by the artists, the event itself and the creative energy and craftsmanship that animated it.

Vocabularies of technique were extended and invented in the drive for personal expression and individual effects. Given detailed attention even findings were delicate marvels of invention.

But one no more thought of these articles than of the crown jewels in terms of craft. Unlike crown jewels, however, brought out for state occasions, these were intended for personal use and daily pleasure.

Precious metals were combined with plexiglass, art glass and a lens; ebony, ivory, enamel and mother-of-pearl; precious and semi-precious stones. They were soldered, brazed, forged, fused, fabricated, cast, constructed, inlaid, repoussed, pierced and beaten into a fantasy of beauty and delight.

All professors of art in metal and jewelry in Virginia's colleges and universities were included as well as student and independent goldsmiths. Many of the twenty-two participating artists have appeared in national and international publications; their honors and awards are extensive.

The guest artist, Arline Fisch, Professor of Art at San Diego State University in California, is recognized world wide for her creative approach to metals. She was a pioneer in applying fibre techniques to precious metals and in expanding jewelry into body ornaments. Her dissimilar pieces, a die-cast pectoral and delicately netted necklace and cuff, demonstrated her attitude of exploration.

Honored with a solo show at the Goldsmith Hall in London in 1971, she was recently appointed project director and working artist for Reed and Barton's Signature V collection. In this collaboration between a commercial enterprise and the creative artist, Fisch is the pivotal link between the historical achievements of a Cellini and the practical accomplishments of an industrial society.

The emphasis on expressive forms, esthetic concepts and the development of sophisticated techniques with which to transcend material limitations was the unifying factor in the eclectic collection at the Yeatts. With only a few artists slipping into cliche, this rare exhibit was its own hallmark.

Mark Baldridge, "Shades of Grass", perfume container, sterling

The artists approached their work either through an overriding concern for design, a sensitive response to the qualities of the metals or a primary interest in stone.

Meticulously crafted, Jerry Krebs' work was characterized by a textural richness. Two small pebble shaped boxes were hollow cast in a method developed but not yet published by Krebs, an Assistant Professor of Art at Radford College. A lens provided the hinged lid for another small box, magnifying whatever was contained within — diamond chips came immediately to mind.

Contradictory materials created an understated tension in two pins by James Meyers. Primitive iron, bone and tortoise shell were combined with the refinement of retriculated gold, oxydized silver and plexiglass into bold understatements of forms.

A sterling perfume bottle by Mark Baldridge, editor of the Goldsmiths Journal, wed exaggerated shapes and a lively imagination with high polish and textured passages.

Still a student, Sarah Schaffner crafted a free-form fibula published in the Goldsmiths Journal.

A small free-standing sculpture of a box, by Ron Wyancko, and a large coat pin were audacious work. His delicate use of shell forming testified to a unique and advanced degree of craftsmanship.

As many of these artists did, Peter Wreden explored several design concepts. The contrasting color and texture of sheet plexiglass warmed a pin of exacting proportions; a couple of pieces united organic fluidity and geometric precision.

Truman Capone cast a three dimensional genre scene in one of his belt buckles. Faith Capone combined metals stones and a clean treatment into unusual designs.

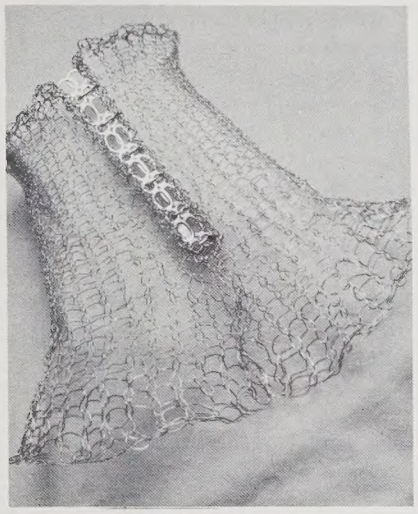
Derived from pop art, Nancy Thompson's imagery was a three dimensional version of photographic realism. She miniaturized articles of common use into jewelry exact to the minutest details.

A silver DRAGON BOX by Diane Porzel, chased, repoussed and touched with turquoise, had a medieval quality. Marty Harvey's raised sterling wine goblets, washed with gold, were sculptural in their bulbous forms. Don Harris's etched pendants reflected his experience as a print maker.

Jerry Krebs, "Match Box", sterling silver, carved ivory, photographed by H.G. Miller III

Jerry Krebs, "Boxes", tall one "Magnabox", photographed by H.G. Miller III

Arline Fisch, woven neckpiece



Joyce Gray, "Cloisonne", lapis, turquoise, coral, photographed by H.G. Miller III

Several pins by Lyn Yeatts examined the landscape from different perspectives. Mike Flora, craftsman in residence at the Yeatts Gallery, did replica casting of weeds in an alloy of his own making.

A delicate vermeil choker with clusters of baroque tiger lilies and heavy geometric rings in silver and lapis, by Joyce Grey, were in dramatic contrast to each other and to her production pieces.

Also exhibiting were Sara Dierick, Marsha Kur, Allan Eastman, Judy Boggess, Eleanor Mull, Gabriel Ofiesh III, and H. B. Witten.

The University of Arizona is accepting applications for a metalsmith/jeweler of "clearly established national reputation" as a Visiting Artist (sabbatical replacement, in actuality) for Semester II 1978-79 (Jan. 18 through May 8, 1979). The position carries a stipend of $12,500 for the semester. The person selected will be asked to teach two jewelry/metalsmithing classes in the area of their preference, present a substantial exhibition of his/her work, and be willing to deliver public lectures and/or workshop-demonstrations for the community. Applicants should submit resumes and slides to: Michael Croft, Dept. of Art, University of Arizona, Tucson, AZ 85721. 602/884-4642. Deadline is April I, 1978.

PROFESSIONAL ARTIST-CRAFTSMAN: Studio Industries of Tuskaloosa, Inc., Tuskaloosa, AL, announces the position for Artist-Craftsman in the areas of jewelry, textiles and ceramics. A master's degree and minimum of 2 years experience in chosen media or B.F.A. plus 4 years experience required. The Artist-Craftsman will be hired to set up a studio industry large enough for himself and 2 or more artisans. Submit application and resume and at least 16 slides of work. For further information, contact: Alice Heystek, Director, Studio Industries of Tuskaloosa, Inc., P.O. Box 1117, Tuskaloosa, AL, 35401, 201/758-5048.

VISITING ARTIST-TEACHER POSITION

Next year, the school of art at Montana State U. will be continuing its visiting artist/teacher program. The metalsmithing area is interested in persons who could teach in the metals program for any one of the three academic quarters.

If you are interested, please send your resume, slides, and a preference of which quarter you would be interested in teaching by March 15.

Fall Quarter—Sept. 12, '78 thru Dec. 15, '78; Winter Quarter—Jan. 3, '79 thru March 16, '79; Spring Quarter—March 21, '79 thru June 8, '79.

Write: Richard Helzer, Associate Professor, Jewelry's Metalsmithing, School of Art, Montana State U., Bozeman, Mont., 59715

The Arrowmont School of Crafts is now reviewing grant applications for the 1978 summer sessions, from June 18 to August 26. Twelve internships and twenty scholarships are being offered. To be considered, you must fill out an application and provide slides of your most current work. Deadline for the application is March 15, 1978.

For information and applications, write or call Arrowmont School, Box 567, Gatlinburg, TN, 37738. Phone: 615/436-5860.

George A. Schuetz Memorial Fund Jewelry Design Contest, sponsored by the Gemological Institute of America. There is no limit to the number of entries a contestant may submit. Each design must be for a piece of men's jewelry. Entries may be in the form of a wax model or color renderings. Deadline for entries: Feb. 28, 1978. A $300 scholarship will be awarded to the winner, to be used in any course of study closely related to the jewelry industry. For further information, entry forms and rules, write: George A. Schuetz Memorial Fund, Jewelry Design Contest, c/o Gemological Institute of America, 1660 Stewart Street, Santa Monica, CA 90404.

The Craft Center of Worcester, MA offers opportunities for full-time studies in ceramics, metal, wood, fibers, and graphics, with two-year programs which prepare students for careers as professional craftspeople; and one-year programs to prepare college-bound students for admission to degree granting institutions. Two 20-week semesters run from Sept. through June. For application information, contact the Craft Center at Sagamore Rd., Worcester, MA 01605, or call at 617/753-8183.

SNAG AUDIO VISUAL LIBRARY

Slide kits are available on the following people: Maurice Abramson, Jay Adams, Glenda Arentzen, Joel Bagnal, Mark Bladridge, Peter Blodgett, Beverly De Jong, Bob Ebendorf, Gerry Evans, Arline Fisch, Robert Risher, Jacqueline Fossee, Nilda Getty, Drewry Hanes, Mary Lee Hu, David Keens, Marcia Lewis, Val Link, Richard Mafong, James Malenda, Tom Markusen, John Marshall, Kurt Matzdorf, Richard Mawdsley, George McLean, Jim Meyer, Albert Paley, Natalie Paul, David Pimentel, Mary Ann Scherr, Heikki Seppa, Helen Shirk, Olaf Skoogfors, Toni Snyder, and J. Fred Woell.

Slide kits are also available on the following artists: Eleanor Moty, Laurie Spivak, Hannelore Gabriel, Lee Barnes Peck, Thomas Sandretto, June Schwarcz, Douglas Steakley, Harold O'Connor, Debra Lynn Gold, Eric Martin and Jamie Bennett.

Rental period is two weeks. There is no rental fee for pro members (except return postage). Rental fee for associate members and student members varies from $1-$2 per carousel (depending upon the number of slides; carousels contain 20-60 slides) plus return postage. Write: Sandie Zilker, 1536 Hawthorne, No. 4, Houston, TX, 77006. Please give a few weeks advance notice and make checks payable to Society of North American Goldsmiths.

A 13-minute, 16mm film on the Society of North American Goldsmiths is available to members for rental periods of two weeks. Associate members' fee of $5.00 plus return postage of $3.00. Pro members' fee is return postage. Contact: Sandra Parmer Zilker, 1536 Hawthorne No. 4, Houston, TX, 77006.

SNAG SLIDE UPDATE

Attention All Professional Members:

It is important that each of you update your slides and add a slide of yourself working. These slides represent you individually and all of us collectively. Failure to respond can result in being represented by older or out-of-date work. Send slides to: S. P. Zilker, 1536 Hawthorne, No. 4, Houston, TX, 77006.

WORSHIPFUL COMPANY OF GOLDSMITHS REVIEWS ITS TECHNICAL ADVISORY COMMITTEE

(from material furnished by the Worshipful Company of Goldsmiths)

It is ten years since the Company established the Technical Advisory Committee to supervise the research and development programme carried out by the Technical Department and therefore this is perhaps a good time to review what has been achieved.

Active work commenced in October 1966, when the present Director of Research, then known as the Technical Development Officer, took possession of an office very generously provided for a two-year experimental period by the Sir John Cass School of Art.

The objective, then as now, was to provide technical assistance in every possible way to the jewellery and silverware industry and the first task was to draw up a list of projects requiring technical work and to get to know as many people as possible at all levels of the industry.

The Technical Development Officer himself carried out experimental work, aided by staff and students of the School of Jewellery and Silversmithing, and by 1967 it was possible to mount a small exhibition in London, Birmingham and Sheffield to demonstrate some of the new technical ideas which were considered to be of value to the industry.

At an early stage it was decided that the Department would not be insular in its outlook and in 1967 the first of many visits outside the country was made. Since that time twenty-three countries have been visited ranging from Finland to South Africa and Mexico to Austria. Attendance at the more important jewellery trade fairs has regularly featured in the travel programme; the Milan and Basel Fairs have not been missed in the whole period. It is considered that this continuity of information, and contacts with the overseas competing manufacturing industries and the major equipment suppliers is most valuable to the British industry.

The first projects on which work was concentrated were mainly concerned with silver and foremost of these was a wide ranging study of problems in the sand-casting process used in the silver industry for the short run production of a wide range of components, figures and other items. This was a very old process around which had grown a certain mystique. The castings being produced were subject to a number of recurring defects causing difficulties to the foundries' customers and it was a dirty and unpleasant process for the small number of highly skilled men engaged in it.

After considerable work, most of the causes of defects in silver sand-casting were pin-pointed and improved procedures were instituted. The mystique of the process was in fact the unknowing exploitation of a very interesting method of grain refinement. This was clarified and finally a new sand system was evolved which led to a marked improvement in the quality and uniformity of castings. Efforts to clean up the process were less successful, but a health hazard arising from the use of cadmium containing alloys was identified and eliminated.

Following this early start with sand-casting, the Department has become identified as the main source of technical expertise in the more widely used investment casting process which is used by virtually all sectors of the jewellery and silver industry. With the experience developed over the years, the Officers of the Department are now in a position to advise on complete installations of any size and are able to solve almost all problems arising in the operation of the technique which is now considered the single most important process in jewellery production. The Company is frequently consulted by suppliers of equipment and materials for casting, and has been responsible for the introduction of many new items to the British industry.

Other projects in the early years included the use of plastics materials in tools and dies, the use of salt baths for metal annealing, the application of infra-red heating for enamelling, electro-forming of silver and brazing stop-offs. Some of these ideas have become part of regular production or craft practice, but others perhaps too advanced for the industry at the time, have failed to be adopted as yet.

Salt-bath annealing is an interesting case in point. As long ago as 1936 this technique was proposed for the prevention of oxidation in the annealing of silver in a lecture at Goldsmiths' Hall. In the late 60's the Company again proved its value by means of a specially built demonstration unit, but it has still not been adopted in the British silverware industry, although widely used in the U.S.A. and on the Continent.

As the work of the Department became better known, less time was available for active experimental work and increasingly, projects were carried out voluntarily by staff and students at schools of jeweller and silver-smithing and technical departments of universities and polytechnics.

Under these arrangements a valuable survey of the problems of polishing silverware and a feasibility study of the use of photo-etching in silverware and jewellery were carried out at Birmingham Polytechnic Art and Design Centre. Studies on the use of adhesives in the manufacture of jewellery soldering at Hornsey College of Art. These projects all provided most valuable information which has been widely disseminated to the industry.

Many, more technically orientated projects have been carried out in the metallurgy departments of the City of London Polytechnic, Sheffield Polytechnic, the University of Aston and elsewhere. The areas of work covered have included tarnishing of silver, lead contamination of commercial gold alloys, various aspects of gold and silver plating, the fire cracking of white gold, coloured gold compounds and aspects of melting and casting processes.

Not all of these projects have lead to publishable information, but all have added to the general store of information, which is invaluable to the Company staff in their work.

Another area where there has been fruitful co-operation with a university is the series of literature surveys carried out by students of the City University Centre for Information Science. Surveys on white gold alloys, the tarnishing of silver, adhesives for precious metal bonding and silver plating processes have in every case provided most useful additions to the background knowledge available to the industry.

When the first experimental projects were completed, the first of a long and continuing series of 'Project Reports' were written and these were augmented by a second series of 'Special Reports' dealing with other aspects of interest such as new equipment, the industry of other countries and various other topics.

The reports of the Department are advertised in a technical news letter 'TAC News', which has run into thirteen editions, resulting in the distribution all over the world of many thousands of copies of the eighty technical reports written to date.

Education for entrants to the industry has been another pre-occupation and the Director of Research has been directly responsible for the introduction of the formal teaching of elementary metallurgy in some of the leading jewellery schools. The involvement of the staff and students of these schools in work on the Company's projects has also helped to develop a more realistic technical approach to the education of potential entrants to the industry.

In 1974 the Company was asked to undertake major research projects on gold on behalf of the Chamber of Mines of South Africa. These researches were concerned with white gold alloys, low carat gold casting alloys and the measurement of the colour of gold alloys. The scale of work required was well beyond the resources of the Company's research unit and the projects were subcontracted to a specialised research organisation and the Departments of Metallurgy of a University and Polytechnic respectively. These arrangements have worked out well and though all three projects as yet are incomplete, publication of major technical papers on them, detailing results to date, are in preparation.

During 1976/77, responsibility for the Chamber of Mines research operations in the jewellery field were passed to the International Gold Corporation (Intergold) which has now entered into a contract with the Company for the organisation and supervision of research contracts on their behalf for an initial period of three years.

During 1976 Intergold commissioned a survey of the technical requirements of the European gold jewellery industry. This resulted in a comprehensive report of the technical background to the whole industry and included a detailed examination of areas where research action could be of value to the industry. This report was accompanied by a proposed scheme for the setting up of an international technical advisory service for the jewellery industry following the pattern successfully established by the Company. The acceptance of this report, has led Intergold to conclude further contracts for technical consultancy and training of technical personnel.

With the increased emphasis on research connected with gold, it was felt that silver should not be neglected, and the Company is now seeking sponsors for research on problems associated with this metal. The first project of this type is on the tarnishing of silver and a consortium of European users of silver and silver electroplate is in the process of being formed to finance the work.

In 1976 the membership of the Company's Technical Advisory Committee was broadened to include representatives of the two main trade associations — The British Jewellers Association and The National Association of Goldsmiths. The Design and Research Centre for the Gold, Silver and Jewellery Industry, has been represented since the Committee's formation. Also in 1976, the Director of Research was co-opted onto the National Committee of the British Jewellers Association and was nominated as the British representative on the technical committee of C.I.B.J.O., the international jewellery trade organisation. These arrangements should ensure an even better exchange of information and ideas.

The increasing activity of the Department has meant that it has outgrown the accommodation at the Sir John Cass School of Art and it became necessary, not without regret, to move offices to 11/12 Foster Lane adjacent to Goldsmiths' Hall. The strong link which has formed with the school has not been broken, and co-operation in both technical and design development areas will continue.

Throughout these years a technical consultancy service to the industry has been maintained. It is a matter of pride that no genuine technical enquirer is turned away. Assistance has been provided to Government Departments and the largest firms in general British industry, in addition to members of the jewellery and silverware industry ranging from the world leaders to amateurs and students, while even the general public is given assistance when they have queries. These enquiries range from simple questions about where to obtain a special machine or material to requests to give assistance in equipping and laying out complete new plants.

Probably the most important single task carried out by the Department during the past ten years was the work resulting from the conversion of gas supplies from manufactured to natural gas. Both the silverware and jewellery industries are dependant on gas fired torches for many manufacturing operations. When conversion was commenced, it was found that none of the torches then available for natural gas, were completely suitable for the industries' operations and for the key processes of jewellery soldering and melting for casting no suitable torches were available at all.

Having received early warning, the Department, in co-operation with the Gas Council and the area Gas Boards, was able to press for and assist in the development of suitable torches and to arrange instructional demonstrations prior to conversion. As a result, conversion was a virtually painless process in the main production areas and subsequent experience and co-operation with torch suppliers has led to the development of a range of British made jewellers' and silversmiths' natural gas torches of unrivalled quality and efficiency.

Another new departure which took place in the current year was an entry into publishing. In 1974 the Company commissioned a survey of synthetic gem materials by Michal O'Donoghue an emminent gemmologist and the results of this survey have been published directly by the Foundation as a book entitled 'Synthetic Gem Materials'. Despite the specialised nature of the book and its relatively high price due to a small print order, the first printing was rapidly sold and a reprint required. The distribution of sales of the book has not been most remarkable, orders having been received from 35 different countries, though regrettable not from the London Gem trade who originally asked the Company to look into the problems raised by synthetic gems.

With new offices and an assured income for the immediate future, the Department looks forward to further expansion of its activities, particularly in the field of sponsored work. The expertise and reputation built up over the last ten years has put the Company in a strong position to offer its services to the world's jewellery and silverware industries as an independent authority on the technical needs of these industries. A more aggressive policy of selling these services is now being pursued and it is hoped that success in this area will further increase finance available to enable the Company to provide an ever-increasing technical assistance to the jewellery and silverware industry.

INTERNATIONALLY RENOWNED CRAFTSMEN CHOSEN TO WORK IN VICTORIA

The Festival Committee of Arts Victoria 78, after much deliberation, has chosen six internationally acclaimed craftsmen to come and work in Victoria next year for a period of six months under the Craftsmen in Residence scheme. This was announced by Dr. Eric Westbrook, Director of Arts Victoria 78.

The Festival will also include exhibitions, workshops, demonstrations, films, lectures, publications and community happenings of all kinds, involving Victorians of all ages, skills and nationalities.

The Craftsmen in Residence scheme attracted wide interest and applications were received from 150 craftsmen from 23 different countries.

FIRST ANNUAL AWARD FOR EXCELLENCE IN THE CRAFTS

The first annual SAIDYE BRONFMAN AWARD FOR EXCELLENCE IN THE CRAFTS, in honor of the 80th birthday of Mrs. Sameul Bronfman from Montreal, was presented by the Honorable John Roberts, Secretary of State, during the Annual Salon of the Metiers d'Art du Quebec, Place Bonaventure, Montreal, on December 9, 1977.

Robin Hopper, a 38-year-old potter from Victoria, B.C., is the first recipient of the $15,000 award for his work as the most outstanding craftsman in Canada this year. The award is to be given through the Canadian Crafts Council for the next ten years. Mr. Hopper will produce an exhibition of his work during the coming year and go on tour, with $5,000 of his award.

The jury included Orland Larson NS goldsmith and president of the Canadian Crafts Council. Nominations for this award were received on behalf of 42 outstanding Canadian craftsmen.

HOW CANADA SUPPORTS THE ARTISTS

According to the Canadian Crafts Council, craftsmen in Canada may now sell up to $10,000 worth of their products yearly without charging 12% federal sales tax. Also, craftsmen in the $10,000 income bracket do not require federal sales tax licenses.

INTROSPECTION

(autobiography of BOB MITCHELL)

Robert Mitchell, My first ride! I'm in glasses.

The great difficulty in writing an autobiography is that doing so seems to presume a sense of having already arrived at some destination or position in life. At the tender age of 36, I instead feel I'm only beginning to understand where I am going and am far more concerned with the process of becoming, whether it be in my work or my teaching, rather than in arriving. For lack of a better word I call myself a jeweler: I prefer to make small pieces for wearing by beautiful people, mostly in gold. Consistently, whatever the scale, I work with materials that have of themselves—or in their content—a quality of preciousness which relates to human use. I am not happy with the word jeweler, for one of the most enjoyable recent works I completed was a ceiling fixture 9x30' in size, containing nearly 2,000 acrylic light rods. After many attempts at making this autobiography make sense, I concluded it could only be a recollection of my early development, education, and ideas. These in sum present my relevant attitudes, subject to change, pending tomorrow.

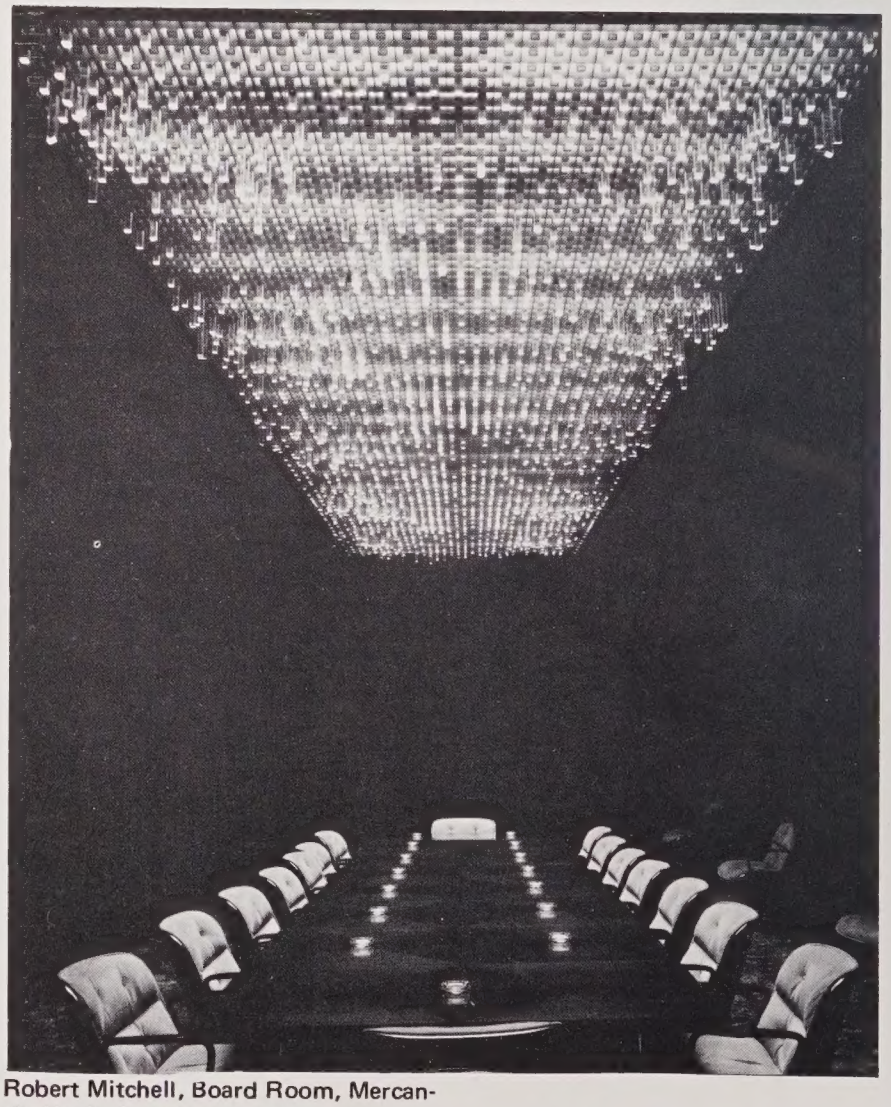
Like most people I was heavily influenced by my parents, childhood surroundings, and the times. I was born in Decatur, Illinois, a small/big town — too big to be easily scrutinized by all the town busybodies, yet small enough to never be more than a 20-minute walk from the woods and river. Neighbors' attitudes were rather provincial, but forgiving. I was a fiercely independent and stubborn child, frequently anti-authoritarian in nature. I became a confirmed loner, with a lot of time given to fantasizing and dreaming about glorious space expeditions or magical inventions. To this day I think I'd still rather have been someone like Marco Polo or Richard Byrd. My parents were chemists, but my father also had an uncanny ability to work with his hands, seeming able to make almost anything appear from scraps of wood or wire. We had a beautiful shop in the basement filled with marvelous tools, each neatly placed in its separate cubicle. He had all the attributes of a successful craftsman. From him I developed a love of tools and what they could do. Both my parents stressed an open mind, curiousity, and varied interests. I grew up with a rifle range in the basement, where I also disected dead frogs, mice, turtles, etc., to see what they looked like under a microscope and how the tissue changed when I added different chemicals. I was twelve when my horizons expanded immeasurably. I became a ham operator and began talking to people all over the world. Distances suddenly diminished and the world became smaller. The over-riding influence of childhood was the desire for control and detachment. My parents were models of this — and I was their opposite. "Think first, be objective." Oh, how many times I can remember hearing that phrase!

My public school education was significant only during the last few years when I realized I had to be in school more than out if I was to go on to college. I chose Illinois Wesleyan University in Bloomington, which had a good reputation in the arts. I could not conceive of teaching in the public schools, so immediately it means grad school as well, for I knew making a living at art was next to impossible. I became serious about getting a good education in terms of exposure and knowledge rather than grades. Leonardo da Vinci was my mentor, preposterous as it seemed. I wanted to know everything there was to know, but quickly I found how ignorant I was. Undaunted, however, I set out to become as good as I could at whatever I was doing. I was fortunate in having several really great teachers: Doris Meyers, a humanities professor who with her unwavering optimism seemed to lead the life of Job; Fred Brian, a printmaker/painter/archaeologist who always demanded professionalism in his quiet, dry-humored, pipe-smoking way; and an excitable ceramicist who was responsible for getting me started in crafts—Tony Vestuto. As students we were fortunate to have studios to ourselves; to work in, to converse in, or even to argue with each other in. We were expected to be involved in what we were working on—almost to the point of drowning. My studio work shifted from painting (which I really never liked because I didn't and still don't like to use color) to ceramics. I responded immediately to its textures, machines, and calculations of recipes of exotic-sounding materials.

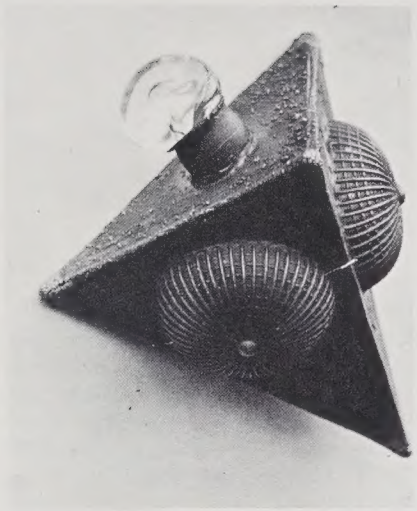
I continued with ceramics through graduate school, studying under Nicholas Vergette at Southern Illinois University in Carbondale. Again I was fortunate; Nick was a smoldering volcano of ideas and help, but always tempered by tremendous intelligence, compassion, and patience. He was a quiet man, and the most articulate I have ever encountered. From his example I learned a seriousness about one's work that will never be forgotten. Unfortunately, like the iceberg, 90% of Nick was hidden from my view, only to be discovered years later in retrospect. I also had my first encounter with metals at Carbondale, but only from the distance of an elective course. I learned how to do a few simple things from graduate students, but my imagination had been kindled. I got married the second year of grad school, and that certainly caused changes. It was a wise decision, for I've continued to enjoy many delightful years, collecting memories, and our son David, now eleven.

After a year of teaching in Florida, I came to Arkansas State University in Jonesboro, where I began to really sort out a few of my ideas and desires. I discovered that ceramics really was not for me, but that metal was. Thus, through the back door I came to jewelry. Too many uncontrollables inherent to ceramics left me cold. I wanted more control over my media; jewelry became my choice, and besides, now I could use the tools that I had always had a love affair with.

Slowly, in the isolation of Arkansas I began to realize my underlying interest: texture, tools, and processes. I began to build a collection of tools



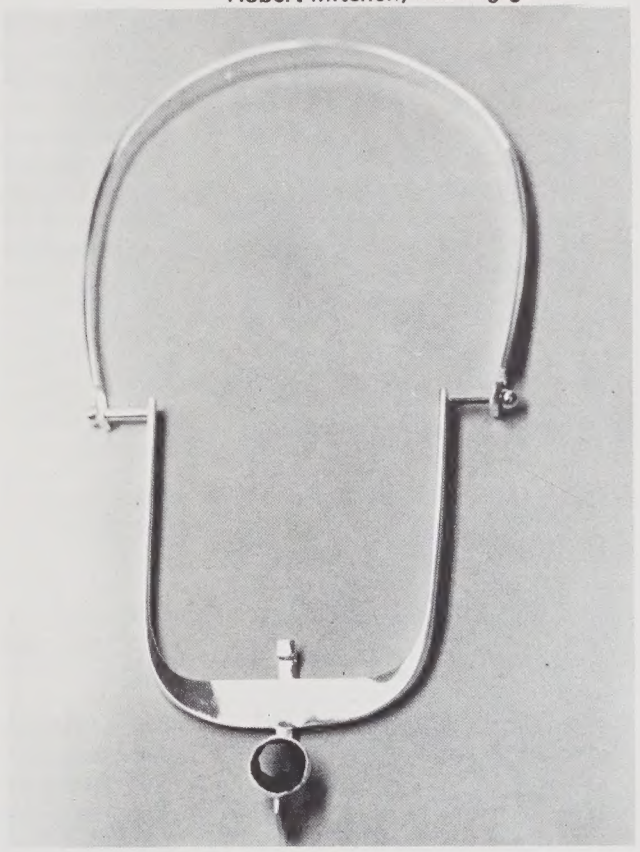
Robert Mitchell, Board Room, Mercantile Bank, Jonesboro, Arkansas.

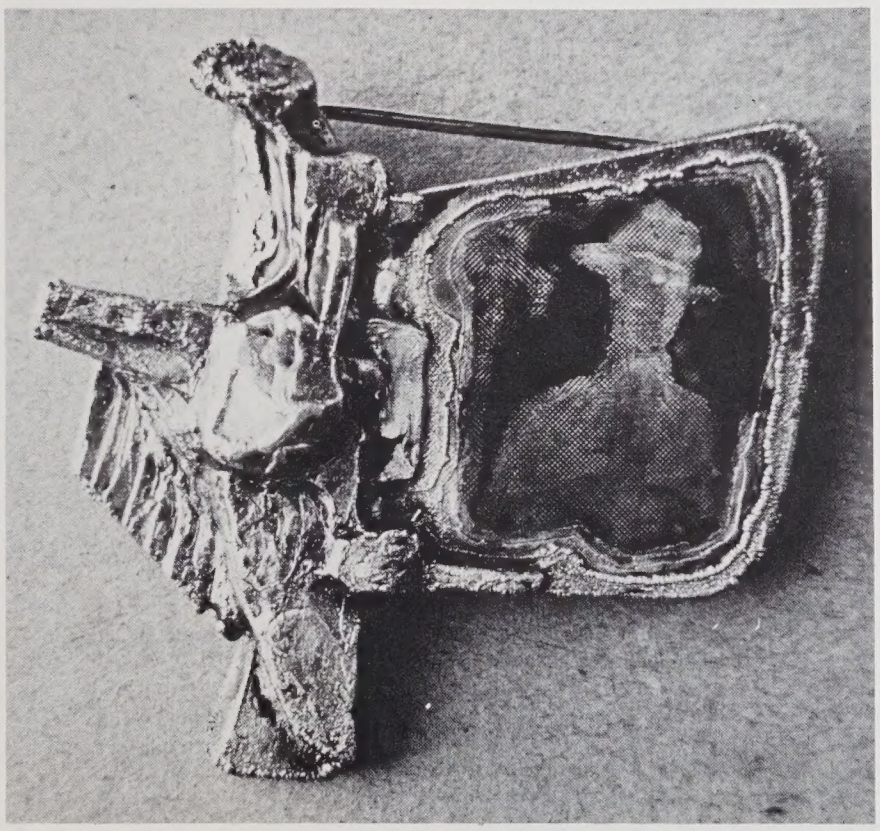


Robert Mitchell, "Big Mamma", silver plated copper

Robert Mitchell, Sterling, brass, nylon cord

Robert Mitchell, Sterling/garnet





Robert Mitchell, Silver electroform with photoetch. Compartment in back of piece

I have when dealing with students as individuals is in remaining sufficiently detached from them to eliminate my becoming too personally involved with their lives and ideas.

Living out of the major cities' paths has advantages, though I have indeed missed the galleries, the ready sources of supplies, good chamber music recitals, and concerts. I find my solitary nature has enjoyed, even required, the quality of aloneness I find here with my work and my students. I'm seldom in a hurry, and I enjoy the clean air I breathe and the smog-less sunsets I often watch.

My art work, though most important to me, does occasionally take a back seat to other activities. I have interests which compete for equal time, with the result that everything sometimes suffers. I am compelled to involve myself in community work, right now that being Boy Scouts. Other interests such as the motorcycle, sports car, or ballooning, have grabbed my attention from time to time. Presently I'm greatly fascinated by computers and computer programming, and I anticipate getting a computer this spring. I also listen a great deal to Baroque music — Bach and Telemann are like the best Piesport/ Mosel: no matter how possessed you become you never quench your thirst.

In summary, I would say an insatiable appetite for knowing why has always been the underlying reason for whatever I work at. And, I hope I never find enough answers.

with which to work, enjoying the collecting and making of them as much as what I could make with them. The continuing quest for the answers to questions led me to my first research grant involving castable plastics and spun metal. It was a beginning that was to develop many more directions and additional grants. Initially I was far more concerned with how and why rather than with what I was making. The processes themselves have always held a great fascination for me. The finished works became precious only momentarily, then passed on to the cupboard or wherever to make room for the next experiment. From that start, I became interested in electroforming, for it captured the various facets I was most interested in: chemistry, electricity, process, art. And so through another grant in 1973, I began exploring electroforming cycle relationships, which then led to a current grant to continue the same with silver.

About this same time I began the metals program at ASU, starting with a few tools and fewer students. During the last five years, I've been fortunate enough to expand it to three rooms and enough students to offer three or four classes each semester. During this building time the students acquired a certain independence and self-reliance, as we have had numerous money-raising projects to add additional classroom equipment, above the normally school-funded amounts.

With teaching, I try always to press students to inquire of their own particular abilities and interests before they decide which directions to take with their assignments. I prefer a low-key approach to stimulate self-confidence and curiousity on their part. I follow a structure of technical assignments each semester, but strongly encourage their modifying and adding to these assignments according to their interests. The biggest difficulty

THE METALLURGY OF RETICULATED SILVER SHEET

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Reticulation is a process used by artists in producing attractive rippled surfaces on rolles sheet of Ag–Cu alloys. A metallographic study of the process is presented which shows that a subsurface layer of CuO formed by internal oxidation plays a key role in the process. Based on this study two processes more simple than the conventional process are presented for preparing reticulation sheet.

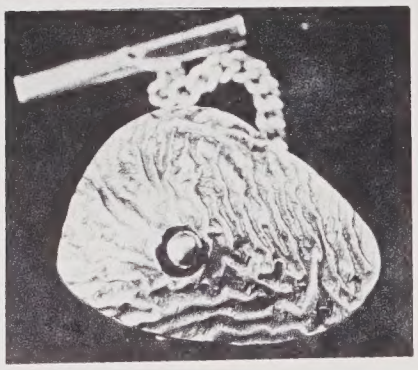
Introduction—Figure 1 is a photograph of a tie tack. The attractive rippled surface of this piece of jewelry has been prepared by a process known as reticulation [1,2]. This technique was developed in the nineteenth century [1] and was used by Faberge, the famous Russian jeweler [3]. This process involves a rather complex procedure which the artist employs to achieve the rippled surface on specific alloys of silver and sometimes gold. The production of these surface ripples is possible because of the composition of the alloys used and the appropriate heat treatment given to produce a suitable microstructure prior to the final reticulation treatment. The purpose of this report is to present a detailed metallographic study of the process by using optical and scanning electron microscopy techniques. From these results, the metallurgical characteristics of the process in the formation of such a unique surface texture are discussed.

Reticulation Process—The reticulation process for silver is described in some detail by von Neumann [1]; the main steps in the process are listed here.

1. Start with an alloy of Ag—18 wt. % Cu rolled to 18—20 gauge sheet.
2. Heat the alloy to 1100—1200 F and quench it into a solution of 1/3 concentrated sulfuric acid—2/3 water. "Oxides of copper and silver formed on the surface are dissolved by the action of pickling, leaving a white film of pure silver remaining."
3. Repeat the heating and pickling at least four times.
4. Heat a local area with a torch and in time a wrinkling of the surface will appear. "This is the result of a melting of the copper—silver alloy on the interior of the sheet though no melting of the pure silver exterior or 'skin' has occurred. [Figure 2(a) shows the prepared alloy.] Figure 2(b) shows how the melting interior shrinks, losing dimension, and causing the unmelted surface to pull up into ridges and crevasses, much like a deflating thin rubber balloon." Once the wrinkling begins, continue moving the torch over the entire piece.
5. After reticulation, pickle the entire piece in a boiling 10% sulfuric acid—water solution.

It can be seen that this reticulation process consists essentially of two stages, a heat treatment stage, steps 2 and 3, and a rippling stage, step 4.

Fig. 1. A tie tack whose surface was prepared from reticulated silver sheet, (Produced by John M. Rogers.)



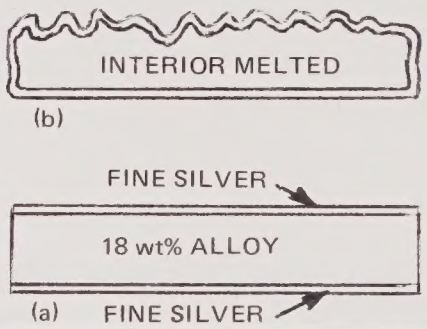


Fig. 2. (a) The prepared alloy after step 3. (b) The reticulated alloy after step 4. (After Figs. 6-6 and 6-7 of Ref. 1.)

Microstructure—Initial experiments were carried out on a reticulated sheet prepared for us by the artist who made the tie tack of Fig. 1 (Mr. John M. Rogers, Bandera, Texas). To ensure edge retention upon polishing, the sheet was first plated with nickel. A plate of about 15—20 microns (1 micron=0.0001 cm) was applied using the Watts bath of reference [4]. Final polish was done with diamond paste on a cotton cloth to avoid edge rounding and the sample was etched with a solution of 0.6% H_2SO_4, 0.1% saturated NaCl, and 5.8 % saturated $K_2Cr_2O_7$ in water. Figure 3 presents a section at the rippled surface of a reticulated sheet with the nickel plate at the top of the micrograph. The interior of the sheet displays the characteristic dendritic structure which constitutes conclusive evidence that the reticulation process has caused melting of the interior of the sheet as suggested by von Neumann. However, the sheet displays a very interesting subsurface structure which was not expected from von Neumann's explanation. Figure 4 presents a higher-magnification picture of the surface region taken on a scanning electron microscope which illustrates that the surface is composed of two layers, an outer light-colored layer and an inner dark-colored layer.

To aid in interpreting the phases present in these structures the Ag–Cu phase diagram is presented in Fig. 5. It may be seen that the primary dendrites of a 18 wt.% alloy would be silver-rich α-phase surrounded by a eutectic mixture containing the copper-rich B-phase. Hence, the white phase on Figs. 3 and 4 is silver solid solution. The dark interdendritic phase displays the color of copper in the optical microscope and must therefore be the copper-rich B-phase of Fig. 5, as expected. However, the dark subsurface layer has a black color and is therefore not the copper-rich B-phase.

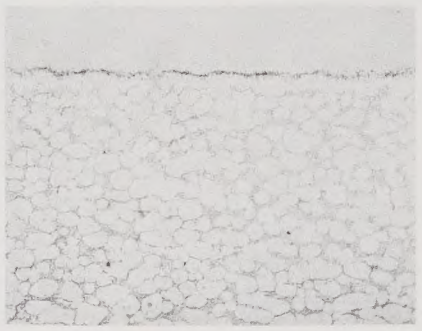
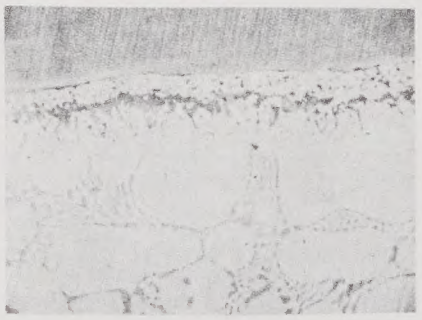


Fig. 3. Section through the surface of a reticulated sheet. Nickel plate is at top.

Fig. 4. SEM photo of surface from same sample as shown in Fig. 3. Nickel plate is at top.



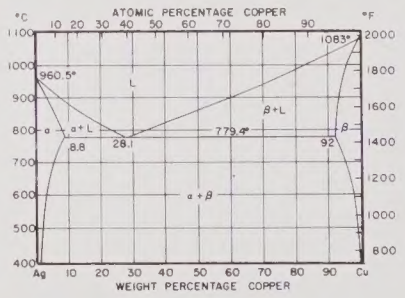


Fig. 5. The Ag-Cu phase diagram. (From *Metals Handbook*, American Society for Metals, 1948, p. 1148.)

To assist in the identification of the phases of Figs. 3 and 4 a sample was examined in the electron microprobe. This specimen was prepared in our laboratory by cycling through the heat treatment stage a total of five times as described below, but the rippling stage was not carried out. Figure 6(b) presents an SEM photo of the region examined in the microprobe. Note the characteristic as-rolled condition of the interior region as compared to the melted interior of the rippled specimen of Fig. 4. Figure 6(a) is an X-ray picture of the region of Fig. 6(b) using CuK_α radiation. The light regions on this micrograph are Cu rich. Figure 6(c) is a similar picture using AgL_α radiation. The light regions on this micrograph are Ag rich. These results confirm that the light regions on the optical and SEM micrographs are Ag-rich α-phase and the dark regions in the interior are Cu-rich B-phase. In addition they show that the subsurface dark layer is copper rich.

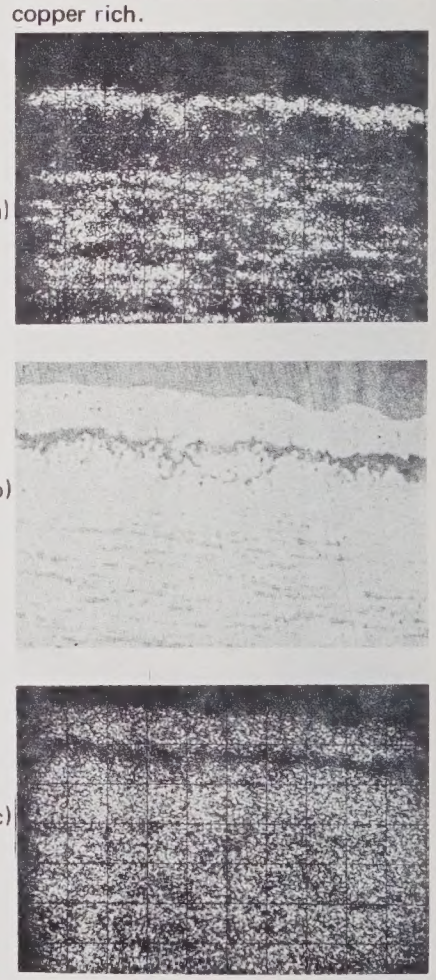


Fig. 6 (a) Electron microprobe picture using $CuK\alpha$ radiation. (b) SEM photo of same region as (a) and (c). (c) Electron microprobe picture using AgL_α radiation.

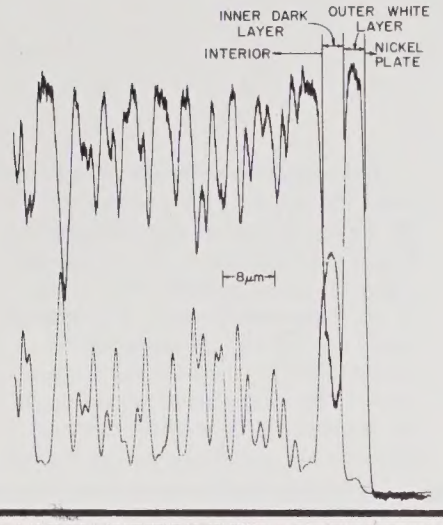


Fig. 7. Microprobe output with samples translated under stationary beam. Upper curve is from AgL_a radiation and lower curve from CuK_a. Beam trace starts in the nickel plate at right and traverses into sample perpendicular to sample surface going to the left.

Examination of the as-rolled starting alloy of Ag—18 wt.% Cu revealed no light or dark surface layer. We therefore conclude that the subsurface dark layer must be a copper oxide produced by internal oxidation. Internal oxidation of Ag—Cu alloys has been shown to occur by several authors [5-7]. Leroux and Raub [5] have shown that in silver-rich alloys the copper oxidized to CuO, but with increasing copper content Cu_2O forms. Under reflected light Cu_2O is blue-gray [8] or purple-gray [9] in color, while it is scarlet-red under polarized light [8,9] or oblique lighting [9,10]. However, CuO has a black color [10]. Since the subsurface dark layer in our samples remained black under polarized light, and since it is formed in a silver-rich alloy, we conclude that it is cupric oxide, CuO, which forms by internal oxidation.

In order to evaluate the relative composition of the outer light-colored silver layer, the specimen was translated under the microprobe beam at a rate of 8 micron/sec (1 micron= 0.0001 cm) and the CuK_a and AgL_a intensities were simultaneously recorded on a strip chart recorder. The path traced out on the specimen by the electron beam was at right angles to the surface layers and may be seen by the light vertical bands at the right of Fig. 6(b). These bands result from polymerized oil produced by the beam on the specimen surface because of poor vacuum conditions in the microprobe. Figure 7 shows the results of one trace. The upper line is from the AgL_a radiation and the lower line from the CuK_a radiation (note: the two pens are slightly displaced to avoid hitting each other). Three traces were made and in all cases the Ag content peaks on the interior. Also, an Ag-rich layer of roughly the same relative composition was consistently found adjacent to the interior side of the inner dark CuO layer. This layer may be seen on the micrographs of Figs. 6(b) and 9 (below) by the lack of *B*-phase Cu particles in a band just below the CuO layer. Hence, a depletion of Cu occurs on either side of the CuO layer, probably in a diffusion band produced to feed Cu into the CuO layer.

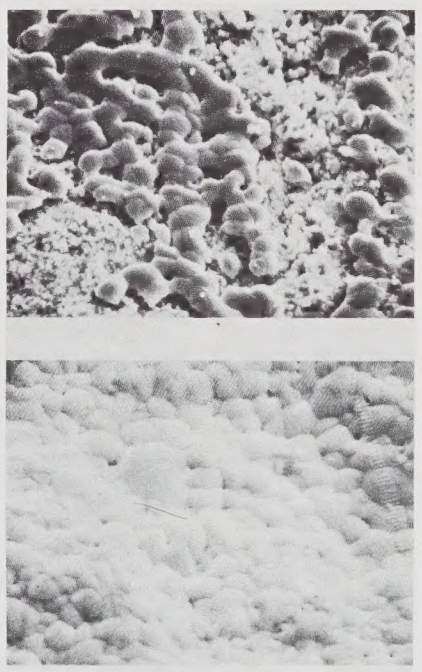
The Rippling Stage—The heat treatment stage was carried out on several samples following steps 2 and 3 listed above. The starting material was 20-mil-thick reticulation silver sheet (18 wr.% Cu in Ag) purchased from Hauser and Miller, St. Louis, Mo. The heat treat cycle of step 2 was performed by heating to 650 C (1202 F) for 5 min. followed by quenching directly into 33% sulfuric acid solution. In the first cycle the as-annealed specimens were a dark gray color which became a whitish-gray with splotches of red after the acid quench. On subsequent cycles the specimens became whiter both before and after the acid quench and after three to five cycles they were a bright soft-white color in sharp contrast to the characteristic metallic luster of the starting metal.

The rippling stage, step 4, was carried out using an air/gas torch and it was found that the rippled surface character could be produced in two different ways.

(a) If the sheet was heated sufficiently, surface melting was observed to occur and movement of the torch could produce surface melting over the entire sheet with a subsequent rippled surface upon cooling. Immediately upon surface melting the surface color turned black. Step 5 restored a white color to the surface of nearly the same tint as was present prior to the surface melting.

(b) If the sheet was heated to a very dim red heat, found by trial and error, subsequent movement of the torch produced a rippled surface which followed along slightly behind the moving torch. In this case the surface retained the same white tint subsequent to the rippling.

To determine the cause of the soft-white color of the surface, SEM pictures were made of the surface of specimens after various numbers of heat cycles. Figure 8(a) shows a surface which appeared dirty white after one heat treat cycle and Fig. 8(b) shows a surface which had a bright soft-white appearance after four cycles. The white color is apparently due to the blister-type surface texture of Fig. 8(b) with blister dimensions of 1—2 microns (1 micron=0.0001 cm). This surface texture apparently develops over the first two to three heat treat cycles by a combination of surface oxidation followed by acid removal of the dark gray CuO layer formed on the surface. Examination of surfaces which had been rippled by type-b treatment showed that the microscopic surface texture was essentially the same before and after rippling.



Fg. 8. (a) Surface of a sample given one heat treat cycle. Color of surface was dirty-white. (b) Surface of a sample given four heat treat cycles. Color of surface was a bright soft-white.

From these experiments we draw the following conclusions concerning the reticulation process.

1. The wrinkled surface results from the volume contraction produced when the inner liquid core solidifies during the rippling stage.
2. In type-*a* rippling the unmelted surface layer is not the silver-rich outer layer but only the CuO inner layer.

We speculate that the reason the surface color becomes black immediately upon surface melting is the increase in Cu content of the surface liquid which is required by the equilibrium conditions of Fig. 5 followed by oxidation to CuO.

3. In type-*b* rippling the unmelted surface layer consists of both the inner CuO layer and the outer silver-rich layer.

Because of the high thermal conductivity of this alloy one would expect the temperature difference between the inner metal and the surface to be under 1C. Hence, the reason the outer layer does not melt in type-*b* rippling is its slightly higher silver content as revealed in Fig. 7.

4. The soft-white color of the reticulated surface is due to a 1—2 micron sized blister texture which develops during the cyclic oxidation plus acid quench process.

Analysis of the Process—In order to evaluate the function of the acid quench in the process several experiments were carried out. Samples were examined metallographically after one, two, and three heat treat cycles and these are shown in Figs. 9(b), 9(c), and 9(d). Figure 9(a) shows a specimen which was quenched into water rather than acid after the first heat treatment. This sample illustrates that the first anneal produces a CuO layer directly on the outer surface with a Cu-depleted layer just beneath it. Comparison of Figs. 9(a) and 9(b) shows that the acid quench removes this outer CuO layer and leaves the surface with a thin Cu-depleted layer. Figures 9(a) and 9(d) show that oxidation upon subsequent anneals is produced primarily by growth of the subsurface CuO layer. The fact that significant outer surface oxidation does not occur after the first cycle was confirmed by examining specimens quenched into water at the end of the second and third cycles. Significant surface oxide was not observed metallographically.

Figure 9(e) is a sample which was held for 85 min. in the furnace following three heat treat cycles. Comparison with Fig. 9(d) shows that the inner CuO layer thickness has increased significantly. This illustrates conclusively that the inner dark layer is produced by internal oxidation.

Figure 9(f) is a sample which was simply held in the furnace for the same total time that the sample of Fig. 9(e) was in the furnace, 100 min. Note that essentially all the oxide of Fig. 9(f) is on the outer surface and there is significantly less oxide present than in Fig. 9(e). Hence, an outer CuO oxide layer appears to inhibit internal oxidation.

The authors would like to acknowledge the very capable assistance of Mr. Edwin Gibson in the plating process, Mr. Harlan Baker for the metallographic work, and Mr. Fran Laabs for the microprobe work. The authors would also like to acknowledge Mr. John Rogers for introducing the authors to the reticulation process and for providing a piece of reticulated silver for the initial phase of this work.

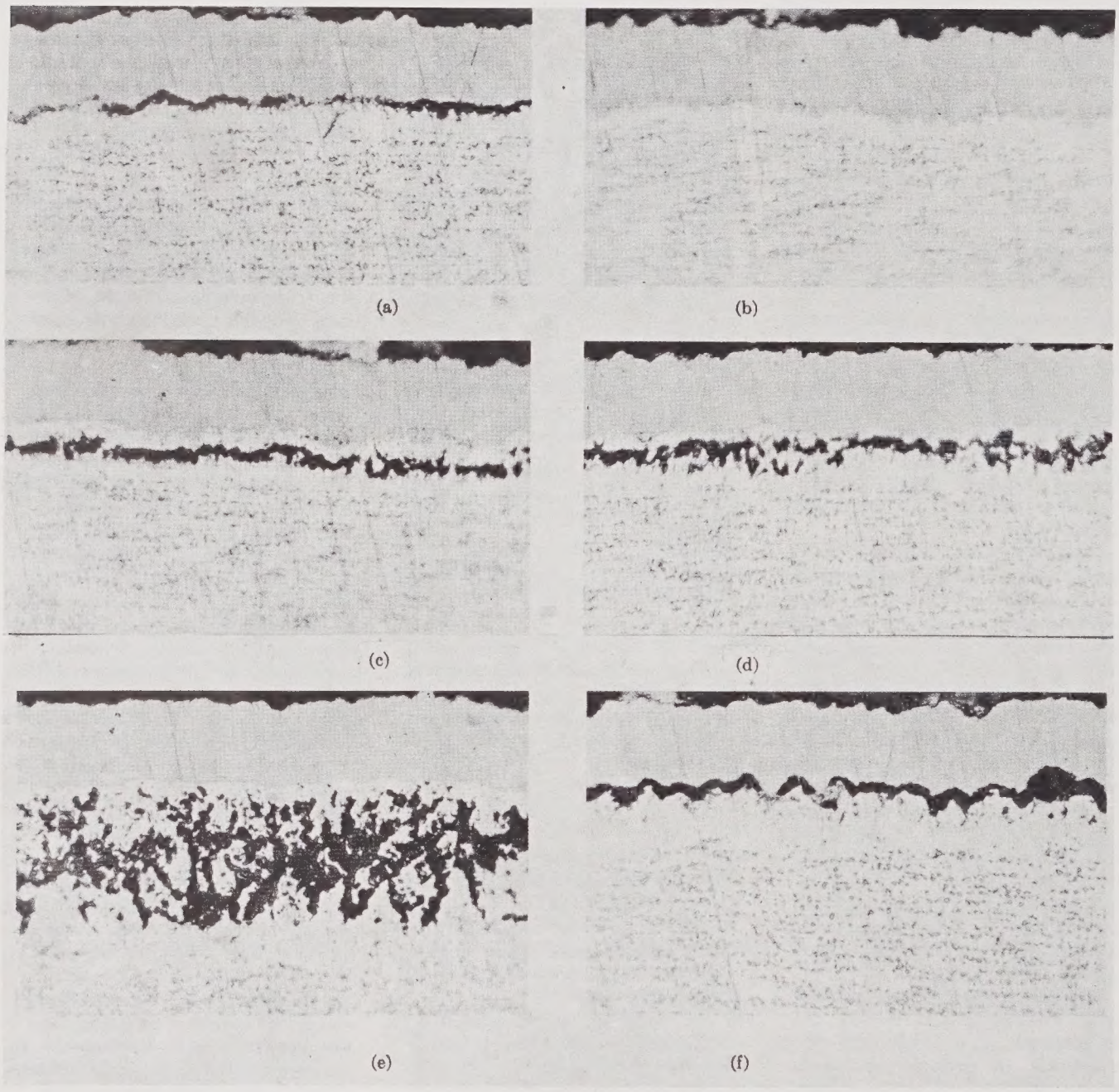


Fig. 9. Several samples all with Ni plate at top and magnification of 775X. (a) 5-min. air anneal at 650 C and quenched into water. (b) 1 heat treat cycle (5-min. air anneal at 650 C and quenched into 33% sulfuric acid solution). (c) 2 heat treat cycles. (d) 3 heat treat cycles. (e) 3 heat treat cycles followed by an 85-min. air anneal at 650 C. (f) 100-min. air anneal at 650 C and quenched into water.

Based on these experiences we make our final conclusion:

5. The function of the acid quench is to remove the outer CuO layer formed upon annealing. Removal of this layer in the first heat treat cycle produces a Cu-depleted surface layer which causes subsequent oxidation to occur primarily by formation of a subsurface oxide layer, i.e., internal oxidation.

Simplifying the Process—Based upon the above conclusions we are able to make two specific suggestions for simplifying the traditional reticulation process described at the beginning of the paper.

First, it is apparent that it is not necessary to have a silver-rich layer at the outer surface because this layer is in fact molten in type-*a* rippling. Hence, one should be able to reticulate a sheet which has simply been oxidized. The surface oxide can then be removed by treatment in boiling 10% sulfuric acid. This conclusion was confirmed by experiments on sheets oxidized for 5, 10, and 15 min. However, treatment in boiling solutions of 10% and also 33% sulfuric acid caused the dark gray surface to become a red color rather than the white color, suggesting that the acid reduced the CuO to Cu which was not completely removed. However, this red color is quite attractive and we suggest that artists might find this simple one-step reticulation process useful.

Second, the above conclusions suggest that the conventional process really only needs to use two cycles in the heat treat stage. The first cycle serves to remove the outer CuO layer and produce an outer Cu-depleted layer. Varying the time of the first heat treatment might allow one to vary the thickness of the outer Cu-depleted layer. The second cycle serves to form an inner CuO layer and the thickness of this layer should be determined by the length of the heat treatment in the second cycle. Furthermore, it should not be necessary to quench into sulfuric acid, but simply air cool and then immerse in boiling 10% sulfuric acid solution.

This second suggestion was tested by carrying out experiments on four different two-cycle heat treatments whose time in minutes was varied as follows: 5-10, 5-30, 30-10, 30-30, where the samples were air cooled and then immersed in boiling 10% sulfuric

acid solution after each heat treatment. In all cases the final samples had the bright soft-white color of the conventional technique. Metallographic examination revealed that varying the time of the first heat treatment did not change the thickness of the outer Ag-rich (Cu-depleted) layer. In fact, this layer was essentially the same in all samples we prepared, including those given as many as five conventional cycles. Increasing the time of the second heat treatment did produce significant increases in the thickness of the inner CuO layer. However, the reticulation characteristics of all four samples were essentially the same as each other as well as that of sheet prepared by the conventional technique with as many as five cycles. Hence, the thickness of the CuO layer can be increased by increasing the time of the second heat treatment, and this greater thickness may have some effect upon the reticulation pattern, although we did not observe any effect in the limited study carried out here.

Summary—Systematic experiments have shown that the conventional explanation of the reticulation process given by von Neumann [1] is correct except for two rather important points. First, the rippling of the surface occurs because of the volume contraction on freezing of the interior rather than a shrinkage upon melting as suggested by von Neumann. Second, the unmelted surface which contains the inner molten core during reticulation consists of an inner layer of CuO and an outer silver-rich layer rather than a single layer of pure silver as suggested by von Neumann. The inner CuO layer appears to play the critical role in maintaining a solid surface layer during reticulation since the rippled surface structure is obtained even when the outer silver-rich layer is melted. The inner CuO layer is formed by internal oxidation.

The sulfuric acid quench plays a key role in promoting this layer-type subsurface oxidation. It removes the surface CuO layer formed in the first anneal and exposes a Cu-depleted surface which does not oxidize significantly on subsequent anneals.

As a result of this study, two more simple techniques are suggested for preparing reticulation sheet.

1. Simply air oxidize the sheet at 650 C for 5-10 min., air cool, and then immerse in boiling 10% sulfuric acid. The resultant sheet ripples quite well but was found to have a reddish colored surface.
2. Air oxidize at 650 C for 5 min., air cool and then immerse in boiling 10% sulfuric acid. Repeat the same process but extend the furnace time to 10 or 15 min. This process produces the same bright soft-white surface color as the conventional technique, it takes only two steps, eliminates an acid quench and produces sheet whose rippling characteristics are identical to the conventional technique.

NOTE: *a* and *B* are used for original alpha and beta throughout this article.

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More specific information and registration materials will be available in early spring.

Please direct any questions to:

Sally Wehrman
316 Newport
St. Louis, MO, 63119

See page 37.

THE UNAESTHETICS OF FABRICATION

by MARK BALDRIDGE
(reprinted from GOLDDUST)

In the search for a suitable technique to express a metal artist's style, many people select fabrication. While fabrication may offer the most flexibility, all too often it becomes restrictive. Too many fabricated objects look fabricated — sheet A is cut and bent and soldered to sheet B, sheet B is textured and soldered to rod C, rod C is twisted and one end has been hammered, etc. Pieces of this nature are similar to the first automobile — here is the headlight, here is the radiator, here is the spare tire, and so on.

Casting is an alternate technique that can eliminate the "fabricated look" and casting can allow a unified flowing characteristic. However, cast pieces tend to be much heavier than their fabricated counterparts and large scale castings encounter technical problems.

Electroforming offers another solution; however, to achieve "Lechtzin" results, extremely expensive equipment must be combined with sophisticated electronic knowledge, thus eliminating this alternative for many.

Therefore, perhaps the most feasible approach exists with the philosophy and terminology put forth by Seppa and others. Unfortunately, too often when we begin to fabricate a piece, the technique overpowers the aesthetics. Perhaps more of a conscious effort and/or a new verbal and philosophical approach would eliminate the "fabricated look" that now exists. Fortunately, the Seppa group is aware of this drawback and the terminology is put forth in a conscious attempt to eliminate the fabricated look and explore the full potential of fabrication.

RESPONSE TO "THE UNAESTHETICS OF FABRICATION"

by HEIKKI SEPPA
(reprinted from GOLDDUST)

In response to your comments on various technical approaches to metalsmithing, I can't help but offer some defense for fabrication. It is one part of metalsmithing activity without which one could not do anything. It is the first basis for handling metal. It is that primal state that has to be understood first. It is hardly the fault of the technique if the "artist" cannot develop his skills and vision beyond that. I agree that too much work is done on this elemental state; too much bad work is also done by casting — perhaps even more.

Our general level of enthusiasm and vigor in metalsmithing deserves a much more complete understanding of what can be done and how. Fortunately we have, in this country, a number of excellent schools where, in a very short time in history, a tremendous educational feat has been performed.

There is a lot of work left to be done; our consciousness of *form* has been clouded by the immediate excitement of the surface techniques. We have not focused on the complexities of possible *structures* in our work. Structural aesthetics has been observed by other craftsmen long ago. The gold-silversmiths are still toying with the same primitive forms and structures. Our emphasis on the *tactile* aspects of our work is still to be nurtured.

"Shoemaker should stick to his last" is an aphorism which the metalsmith should have heeded long ago. You mention a fabricated look, cast look, a formed look. This is a very bespeaking of the general trend, which probably was inherited and constantly fanned on by the visual artists. It is their business to make their art visually right. Ours is only one part visual, the rest structural and tactile, just to mention two.

The idea in jewelry that it must look good leads us to areas where we have the least concern.

For fear of generating undue polemics on the issue of terminology, let me be brief and say that, while I realize the fact that "the need is the best wordsmith", I also realize the need. The metalsmiths are, at present, prisoners of our own terminology. We should come out of the outdated and underdeveloped 18th century and update our glossary by the commensurate vocabulary with the strength, excitement and vigor of our creativity in the 20th century.

Our organization, SNAG, can be a very useful instrument in upgrading our communicative means. The newsletter, dear editor, is exactly such an arm to do the job.

EDITOR'S NOTE—Because of the variety and nature of the Letters-to-the-Editor, SNAG and the GOLDSMITHS JOURNAL cannot verify or be responsible for the materials these letters may contain. It is therefore suggested that you carefully analyze and verify all information herein. We shall consider publishing responsible letters which refute any information we publish.

Dear Editor,

. . . I do appreciate your inclusion of my last letter in the June 1977 issue of GOLDSMITHS JOURNAL. In reading it over, I realize several errors. The most prominent being the word "toy" in describing the little cast iron flasks commercially available through Swest (in our area) etc. The second error is in the area of my particular needs. My main need is to talk with other sand mold makers, and specifically those working in jewelry (which has become my main pre-occupation these days), and to see so much of innovation in that area and other areas of jewelry (construction, forging). . .

Hank Kaminsky

Dear Editor,

I just finished reading the latest *Goldsmiths Journal* which I always enjoy . . .

I note on page 19 a reference to *Craft Horizons* in which the price is quoted at $12.00. This is a price which we offered in two special mail promotions during 1977 — to former ACC members and to students through their schools. The price of membership in ACC, including six bimonthly issues of *Craft Horizons*, in effect now is $18.00.

Best wishes for the new year!
Loris Moran, Director, National Program, American Crafts Council

Dear Editor,

I'd like to thank Glenda Arentzen and Alma Eikerman for replying to my question about the jurying procedure (Vol. III, Number 3, page 18, June '77). I'm also glad to see the three criteria presented with membership details now. However, I have discovered through conversations with members that almost everyone assumes I had been rejected. This is not true, I have never submitted and never been rejected or accepted for full SNAG membership. I simply wanted to find out how jurying worked. So far I found out who the jurors are, their criteria, how their vote is submitted, the fact that they include a reason if rejected, and that there is no general discussion between jurors. The personal replies gave insight into the personalities of those jurors. I think that knowing this information, an associate has a clearer idea of what happens after the 20 slides are submitted.

Also, I received the prospectus for the Salnger National Jewelry and Small Sculpture Exhibit, Hattiesburg, Miss. The artist is required to pay a $10 entry fee plus shipping both ways. (This could run $4 to $10 each way if registered.) The information states that the show is funded by a NEA Grant. I was under the impression by an article I read that NEA was no longer funding shows with high entry fees and was suggesting abolishing the fees. I also feel it is the sponsor's responsibility to pay for the return of accepted objects after the show. I am not going to submit to any shows this year that ask me to pay a fee plus double postage. I hope other SNAG members will agree that the artist should not pay everything. The Research and Education Department of ACC agrees — they have published a guide for competitive shows. (Write ACC, Research and Education, 99 W. 53rd St., N.Y., N.Y., 10019, with stamped, self-addressed envelope) or see *Craft Horizons*, Feb. '76, page 11, for the basics of that report.

Pahaka

Dear Editor,

Page 17 (Films and Slides), Issue 14, seems to run an advertisement for ACC portable museum, and in the process softpedals the SNAG Audio Visual Library listings. This could be justified under the label of "For the availability of information" — but when there are outright prices displayed on the goods, it turns itself into an ad. I'm sure we could do without this kind of competition, on our expense. The SNAG/AV Library tries to be a genuine service from the point of range of individual craftsmen. Therefore, more emphasis should be given to our own service than that offered by the ACC.

What is also disturbing is the fact that ACC is marketing SNAG shows. How did they get hold of them — and SNAG didn't. Are we totally deprived of the records of our own efforts?

In the spirit of the Bromwoods— somebody please explain.

Heikki Seppa

Dear Editor,

Mrs. Mondale asked me to respond to your letter of November 9. She was delighted to know of your magazine, and is happy to give permission for the inclusion of the following quote in GOLDSMITHS JOURNAL.

In a recent speech, Mrs. Mondale said: "Nothing is more basic to our American heritage than the respect accorded to work done by hand, and nothing is more cherished or revered than those handmade objects — jewelry, quilts, embroidery — passed down by parents to their children and grandchildren. The fact that someone has collected and cared for a necklace or a locket or a bracelet gives that object an extra impact. In a world where so much is artificial, a piece of jewelry fashioned by hand has the authority of the genuine."

With all best wishes,
Bess Abell
Executive Assistant to
Mrs. Mondale

Dear SNAG Members,

The Nomination Committee of the Society of North American Goldsmiths will begin its deliberations for the elections of 1978. The Committee would like to have input from the membership as to who should lead our organization and who should sit on the Board. This election will be for President, Vice-President, and one member of the Board.

Finding the most qualified person to run our organization is vital. Please send any suggestions for possible candidates to me. In making these suggestions you should keep in mind that the person being suggested should be willing to serve. If you are not sure that the person would be willing to serve, let us know your suggestions anyway and we will take care of contacting them. With the suggestions we would like to know why you think this person would make a good officer of SNAG, as well as other information that might help familiarize our committee with the person. If you would like to suggest yourself, please feel free to do so.

All the help you can give us will be greatly appreciated. Submitting names to the Nomination Committee will not necessarily mean that they will appear on the ballot. Please have your suggestions to me by Feb. 25.

Nomination Committee:
Chuck Evans
Marcia Lewis
Richard Mawdsley, chairman
1721 Truman Dr., Normal, IL, 61761

Dear Board-President-Editor-Members,

To avoid confusion in the elected positions in the organization, I once suggested that the elected officers' names appear with the expiration years after them. I find it difficult to remember, myself, when my office tenure expires. For instance: Mary Lee Hu, Pres.—'78, Joel Bagnal, Treas.—'79, etc. Or else, from time to time, publish the various vacancy facts in the JOURNAL. The membership would benefit in suggesting new blood to the elected officers.

Do we dare do some things different from others?

Heikki Seppa

Dear Editor,

I was prompted to write the enclosed letter to Following Sea Shop and Gallery in Honolulu when I learned that they had decided not to show ANY jewelry or related metalwork in their 1978 season. Although this would be a regrettable decision for a gallery anywhere in the U.S. I believe it is especially so here. Hawaii, besides being the "crossroads of the Pacific" also has an enormous tourist industry which means that the potential for public exposure to contemporary metalwork is quite large.

The reason given for not showing metalwork in 1978 was that the work shown in their 1977 season was not "well received". I assume this means it did not sell well. Mary Ann Scherr and Fred Fenster have been mentioned in the letter because their work was shown during this past season.

This kind of attitude is hazardous to our health, individually and collectively. I would like to encourage our membership to register immediate protest when gallery and shop policies are detrimental.

Carole Bowen

(copy)
Michael Gibson
Following Sea
1441 Kapiolani Blvd.
Honolulu, Hawaii 96814

Dear Michael,

Thanks for your recent call. It was interesting to hear your reasons for not including metal in next years' schedule. After we talked some thoughts occurred which I would like to share with you.

Although I do admit to being disappointed, it is far more disturbing to me to realize that there will be no jewelry or holloware shown in your 1978 exhibitions. I was so impressed with your series of shows in 1977 — you had great diversity of media from a broad geographical range. Well established mainland artists were presented along with talented local artists.

I believe Following Sea, like every good gallery, functions as an educational institution as well as (I hope) a successful merchandising operation. Galleries which sponsor top quality work provide arts leadership to the public and help to blur the traditional boundaries between art and craft by presenting quality work in a professional setting. Everything Following Sea has done to date has been outstanding. Your displays and beautifully designed advertisements should be a model for other shops in the arts community.

In the field of jewelry and metalsmithing I believe public taste is still largely determined by 19th century mass production techniques because this is what people have been exposed to the most. From the late 19th century, one of a kind pieces were minimal until the mid-1940's when European metalsmiths were imported to establish university metal programs. From that infusion came the strength of American metalsmithing today. Most of the innovative work in the field is being done by a few hundred people such as Mary Ann Scherr and Fred Fenster, internationally known, who are or have been connected with college and university programs all over the country. Historical interest in metal is being stimulated by major exhibitions such as the King Tut and the current exhibit of Irish art at the Metropolitan.

Exposure to work of this caliber will result in a gradual re-education of the public, an appreciation of jewelry as personal, portable sculpture and appreciation of new forms of holloware which are emerging from centuries of bowls, goblets and teapots. The metal object is in the process of being liberated from function in much the same way as clay; besides functional pottery there now is a large body of non-functional clay work which exists purely for delight, work which has gained wide acceptance in recent years as sculpture in its own right.

I believe your success in selling jewelry and related pieces depends upon public acceptance of new forms and that, in turn, depends upon the exposure you can give to contemporary forms of expression in metal. Innovation begins with the individual, in one's own studio, but is "distributed" through progressive galleries and shops.

If you show only traditional and conservative jewelry in the "shop" part of Following Sea, the gap is narrowed between Following Sea and the better class of jewelry store, hence the customer will have less reason to patronize Following Sea. Why not merchandise and educate at the same

time? The shop can continue to display jewelry with a wide base of appeal, objects which accommodate current public taste, while the gallery can stretch the imagination with unique presentations. If someone comes in to buy a beautifully crafted, functional object and is exposed to new forms and ideas in the same visit, THAT's exciting!

Following Sea had indeed celebrated the best of American craftsmanship and I hate to see such a vital sector omitted.

Thanks for listening,
Carole S. Bowen

Dear Editor,

I was dismayed to receive your letter this morning in reference to the recent letter from Carole Bowen to me, of which you received a copy—particularly in light of the fact that her letter was received a week before Christmas and I have not had a chance to respond to it. I appreciate your giving me the opportunity to have my response to Ms. Bowen's letter appear in your respected Journal, but I think you should consider the circumstances before printing either letter.

I regret that our decision to defer further jewelry representation in our exhibitions until 1979 — based on a thoughtful assessment of the unique characteristics of this community — resulted in Ms. Bowen's conclusion that we are not aware or mindful of the vital educational function of a gallery. I was personally distressed because of the singular preseverance that we have exerted and continue to exert in both the areas of education and exposure of new ideas.

Ms. Bowen attests to the superlative nature of our shop and gallery. How she can proceed to conclude, based on a five-minute phone conversation, that we fail to perform our most significant function — i.e., our exhibitions — without a high level of consciousness, I do not understand. I feel it was presumptious of Ms. Bowen to broadcast her assumption to various individuals across the country. I would be happy to discuss our year-to-year decision with any individual, including Ms. Bowen, but I do not appreciate being thrust before a forum of the metalsmiths of America, many of whom we work with and know personally.

Under the circumstances, I think the printing of Ms. Bowen's letter in GOLDSMITHS JOURNAL would be inappropriate, misleading, and would serve no constructive purpose.

Yours truly,
Michael Gibson, Director
Following Sea
Honolulu, Hawaii 96814

Dear Editor,

I enjoyed the account of the Longwood Conference. . .I must point out a small error in the report of my talk. The Company does not sponsor the various schools of jewellery and silversmithing in the U.K.; we do encourage them and make small financial grants to them, but in no way are they our schools. In the U.K. all these schools are operated by the local education authorities.

Peter Gainsbury

Dear Pro-Member,

With the near completion of the duplication of members' slides in the Audio-Visual Library and the finished film on the Society, we are moving into other directions and areas of service to the members.

The Society is increasingly being asked to exhibit and indicate the scope of its members' work. The need has developed for an up-to-date collection and presentation of all the members' work that can be sent to museums, foundations, galleries, etc., and used in conjunction with the film. This is particularly important to the upcoming exhibition being planned for Germany in 1979, as we hope to include an AV presentation.

Crucial to the effectiveness of this presentation is current slides; I am requesting and urging each of you to send 3 examples of current major work and a slide of you at work. If you sent this for the film, that will suffice.

Please, don't put it off and remember—original slides duplicate better.

Sandra Parmer Zilker
1536 Hawthorne, No. 4, Houston, TX, 77006.

Dear Editor,

It is heartening to note the rapid growth of the GOLDSMITHS JOURNAL (I hear that many liked the GOLDDUST name better) and find here and there the effects of the pains of that growth. One of these must have hit the Editor or the typesetter at the organization of paragraphs in the biography of the undersigned by Isabel Blase, Journal Number 14, because the article is screwed up in its sequence of events.

So, dear reader — if you still have any interest in the article, rearrange it a bit — all of Ms. Blase's writing is there.

Heikki Seppa

Dear Editor,

There has been an oversight. The St. Louis conference is being planned by four people, not two. Along with Heikki and myself, there is Sally Wehrman, an alumna of Washington University who is presently an instructor at Jeffers College, Hillsboro, MO; and Anne Taussig, a second year graduate student at Washington University. Although there has been a lot of work done and yet to do, we are thoroughly enjoying our brunch meetings.

We look forward to seeing you in St. Louis this June.

John Baltrushunas

Dear Editor,

As a member of a school committee that has been charged to examine the role of activities courses within art and physical education (jewelry, volleyball and softball were some of the areas specifically mentioned), and whether activities course credits be used for accumulative general education requirements for graduation, I ask for your opinions, arguments, etc.

This issue has very broad implications reaching all of the crafts taught in institutions of higher learning.

Could you please respond as soon as possible to the above, as the committee will be meeting soon.

Gene Pijanowski, Associate Professor, Dept. of Creative Arts, Purdue University, West Lafayette, Indiana, 47907

Dear Pro Member,

A real show of near unanimity came out as all of you were canvassed for participation in "The Mini-Show With Maxi-Potential", to be mounted in St. Louis in June for the SNAG Conference. Over 80% pledged to send one piece, especially made for this show. It promises to be one of the most up-to-date metalsmithing shows anywhere, anytime, a truly contemporary display of current thinking and use of techniques and materials.

As chairman of the organizing committee of four, I want to thank everyone for the strong endorsement of the idea. Further details of the show will be sent in March or April 1978.

The committee for the organization of the SNAG Conference '78 in St. Louis, MO, June 8,9,10, are: Sally Wehrman, Secretary-Treasurer; John Baltrushanas; Anne Taussig; Heikki Seppa, Chairman.

Heikki Seppa

Dear Editor,

SNAG members and JOURNAL readers, especially those involved with blacksmithing will enjoy reading an article titled, "How the Iron Age Began", in the Oct. 1977 issue of the SCIENTIFIC AMERICAN. Written by a group of archaeologists and metallurgists from the University of Pa., the article deals with the cultural and technical reasons for the shift from bronze to iron tools in the ancient Mediterranean world.

As well as being enjoyable reading, the article contains explicit technical diagrams, charts, and micrographs to substantiate the text; I recommend it for anyone involved in working iron.

The SCIENTIFIC AMERICAN is published monthly by Scientific American, Inc., 415 Madison Ave., N.Y., N.Y. 10017. Each article in each issue is available in a separate offprint; price is 35 cents each; $5.00 minimum. A catalogue of over 1,000 articles from past issues is available free of charge from: W.H. Freeman & Co., 660 Market St., San Francisco, CA. 94104.

I buy my copies at a local newsstand; most bookstores would carry the SCIENTIFIC AMERICAN also.

Paul Klecka

SOCIETY OF NORTH AMERICAN GOLDSMITHS

1977

APPLICATION OF HOT SMITHING PROCESS TO NON-FERROUS METALS: COPPER, BRONZE AND BRASS

Thomas R. Markusen
Associate Professor of Art
State University of New York
College at Brockport -N.Y., 14420.
April 1977

The motivation for undertaking this research was to establish a more expedient process to achieve volumetric forms in non-ferreous metals. With the availability of commercial seamless tubings it seemed logical to develop working techniques adapted to this resource. I became involved in blacksmithing in 1971 and while developing the working technology of this area I began to realize that many of the processes of blacksmithing and silversmithing could be incorporated to work copper and copper alloys while in a heated state. This paper will deal with the application of shaping non-ferreous metals by forging and upsetting, by forming through sinking, dapping, stretching, raising and pressing, and by bending, twisting, cutting, punching, drifting, stamping, chasing, chiseling and rasping while at a red heat. Fabrication techniques of heated metal will also be discussed. There are no new discoveries in the process, but the research lies in the investigation. The numerous visual possibilities which occur are not possible to achieve without these applications.

METALS: COPPER AND COPPER ALLOYS

There are well over a hundred wrought products in copper and copper alloys available with each alloy varying in its physical working properties. I contacted the Copper Development Association, Incorporated (405 Lexington Ave., N.Y., N.Y., 10017), and they sent a copy of *Standards Handbook: Copper, Brass, Bronze; wrought mill products, Alloy Data/2.* From this publication I was able to determine which alloys had the physical and fabricating properties for this process.

Copper No. 102 (oxygen free 99.95% pure) would be the ideal designate, but I have found to date that any copper designate with 99.3% or more copper content works excellent. High copper alloys (99.3% to 96% Cu) are also available and Alloy Nos. 192 and 194 have excellent working properties. These two alloys are used by the gift holloware industry. The prime considerations for the copper or high copper alloy used should be cost, availability, no lead content and its hot forgeability.

Rating should be 65 or higher as compared to Forging Brass No. 377 rating 100. For seamless tubing the local wholesale plumbing supply has available ¼" to 6" diameter "DWV", "L", or "M" copper water pipe in 10' or 20' lengths which are excellent for forging and forming. Suppliers are listed in the bibliography and in C.D.A. *Standards Handbook: Copper, Brass, Bronze; wrought mill products, Sources/5.*

Brasses are copper alloys which have zinc as the principal alloying element. The wrought alloys comprise three main families of brass: copper-zinc; copper-lead-zinc (leaded brasses); and copper-zinc-tin (tin brasses). We find when we begin to select brasses, copper alloys with less than 96% copper are less versatile and more specifically used for one type of working process. For example, Cu Alloy No. 280 (muntz metal 60%) is excellent hot forming and forging (rated 90), but only fair for cold working. Cu Alloy No. 220 (commercial bronze 90%), No. 226 (jewelry bronze 87½%), and No. 230 (red brass 85%) are excellent for cold forging and forming, but are rated only good for hot forming and not rated for hot forging. The best hot forging brass is Alloy No. 377 (rated 100). It is excellent for hot forming, but poor for any cold work with the exception of Machinability (rated 80) as compared to free-cutting brass No. 360 (rated 100). Also Cu Alloy Nos. 464, 465, 466 and 467 (naval brass) are excellent for hot forming and hot forging (rated 90), but only fair for being cold worked. First you need to determine the most advantageous process in making the object, then you choose the alloy best suited to the technique.

Bronzes are copper alloys which have tin as the principal alloying element. Today the term bronze is seldom used by itself in a technical sense. There are four main families of bronze alloys: copper-tin-phosphorus (phosphor bronzes); copper-tin-lead-phosphorus (leaded phosphor bronzes); copper-aluminum (aluminum bronzes); and copper-silicon (silicon bronzes). Excellent hot forming and forging Aluminum Bronzes are Alloy Nos. 624, 625 and 642, but these are only available in rod form. Silicon Bronze Alloy No. 651 (low silicon Bronze B) and No. 655 (high silicon Bronze A) are excellent for hot and cold forming, and good for hot forging. Cu Alloy No. 675 (manganese Bronze A) is excellent for hot forming and is rated 80 for hot forging.

With one exception Copper-nickel alloys are not desirable for hot working. Alloy No. 725 is excellent for hot forming and cold forming, but not acceptable for hot forging.

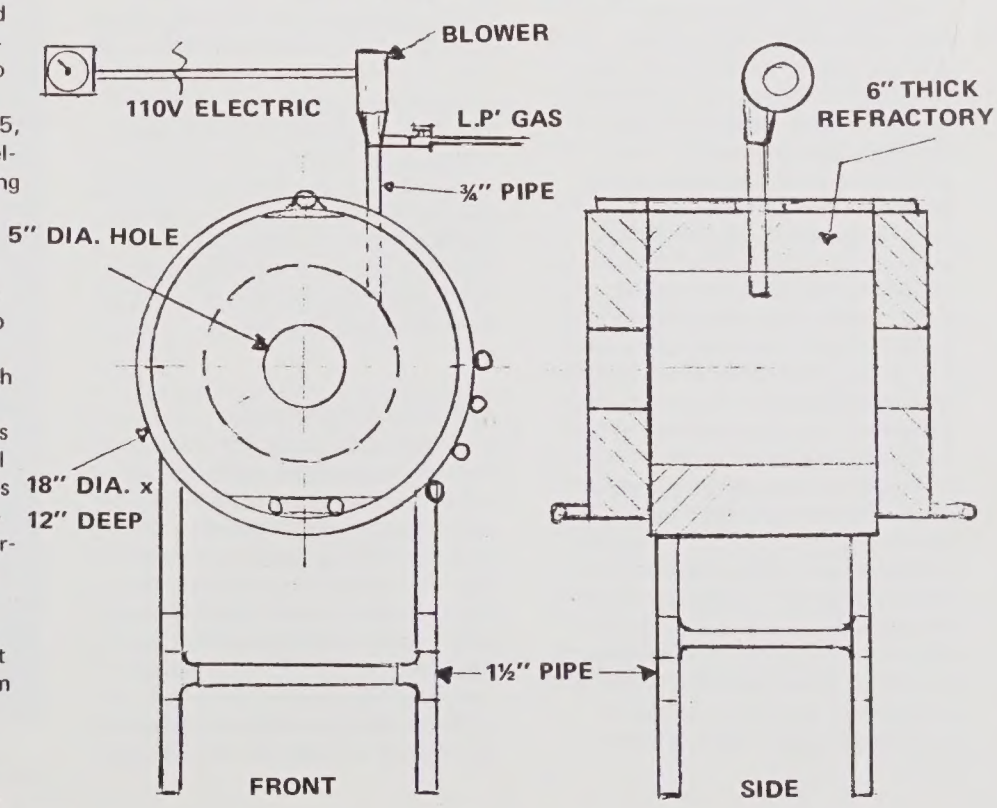
In conclusion the available copper and copper alloys for the metalsmith is vast. It varies in type of stock (sheet, plate, rod, bar, wire, tubing, pipe and shapes) in dimensions, cross sections, and color (ranging from copper pink, gold brass, bronze reds, silicon white-gold, and nickel silver.) In our production as artists and technicians we have only touched upon the wealth of applications available when using copper and copper alloys.

HEATING SOURCES AND TEMPERATURES

If you build a small kiln with soft fire bricks to help hold the heat, heating with natural gas and compressed air or acetylene and oxygen is adequate for small work. But the real advantage to the process is in larger scale pieces. This requires a gas forge which can be simply made from one half of a 25 gallon metal drum lined with a high temperature castable refractory (maximum temperature 2300 degrees F), a small squirrel cage blower with electric rheostat control and propane (100 lb. tank supply) or natural gas (see diagram A). There are several fine commercial gas forges available such as the no. 122 or no. 133 from the Johnson Gas Appliance Company (see diagram B).

The use of coal or coke is limited because of the sulfur emitted when burning. I use a commercial coke containing less than one percent of sulfur for blacksmithing but this is not satisfactory for coppersmithing. The presence of sulfur and extreme heat causes a penetrating oxidation of the copper surface. The surface becomes very brittle and flakes off and the metal erodes at a very high rate. That which does not flake off remains as a brittle surface skin and may crack or separate when working of the metal takes place.

DIAGRAM A — GAS FORGE



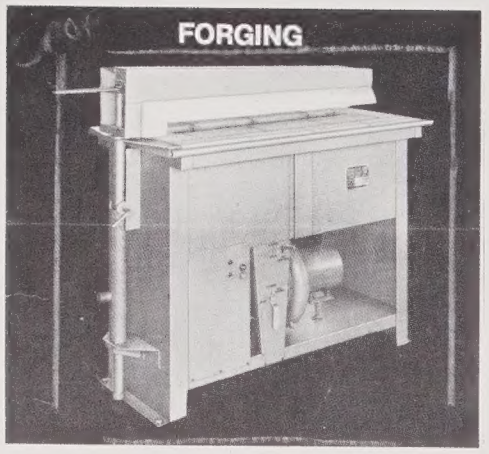
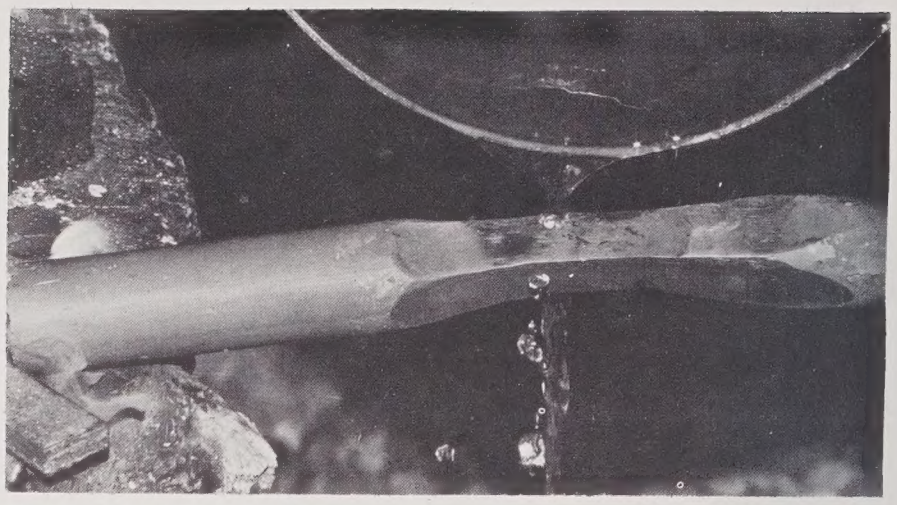


DIAGRAM B
GAS FORGE NO. 133
JOHNSON GAS
APPLIANCE COMPANY



"Photo D"
Cooling area with water,
photo by Tom Moore

Charcoal is an excellent fuel when used in a blacksmith type forge (diagram C). It burns very clean with no traces of impurities, but its one drawback is the large volume of fuel you consume while heating the metal. Charcoal is inexpensive if you manufacture your own.

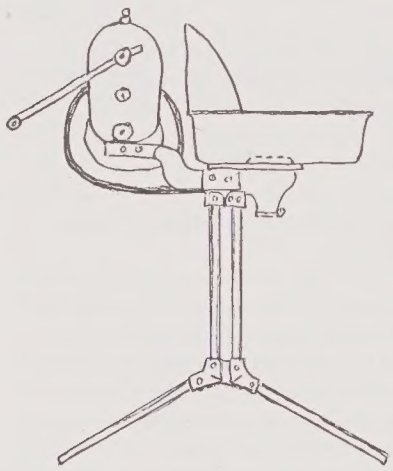


DIAGRAM C —
BLACKSMITH FORGE NO. 212
BUFFALO FORGE COMPANY

It is important to note that if iron has been used in the forge, the forge should be cleaned and new fuel be used for the heating of copper. Iron scale may contaminate the copper.

Depending on the specific alloy you're using, the working temperatures of the various copper and copper alloys range from 1250 degrees to 1650 degrees F (625 degrees to 900 degrees C). The working range is best described by the visual color of the metal at these temperature ranges. By my observation, a dull cherry red to a bright red-orange color of the heated metal describes the working range, but each person could interpret these colors differently. Therefore, establishing your own working parameters by experimenting at the outset is recommended.

There are four additional observations I've noted while working. The first observation is at the point when the metal is overheated. It literally drops off, not slumping or appearing to be melting on the surface. A few moments before this occurs the metal reaches a bright orange color and does not appear to change in color before melting.

The second observation occurs while forging at a bright red heat. The metal becomes overly soft when hammered during a 30 degree to 50 degree F temperature decrease. This is noted especially when drawing a taper. This is also more apparent in larger diameter stock because of a slower drop in mass temperature through this range. The third observation is when forging copper you may continue to work through black heat and down until it's only a couple of hundred degrees in temperature or until the hammer blow leaves a shiney surface and begins to become resistant.

The fourth observation is most critical when you are forging the copper alloys (brasses and bronzes). Although I have not been able to test all the alloys noted earlier, those I have used verifies the following. If you forge the stock below its hot working temperature range it internally fractures even if the alloy is excellent for cold forging. Thus concluding, that like mild steel it becomes brittle at "black heat." It must pass through this temperature range and be at room temperature before working it cold. This does not appear to be the case when hot to cold forming of tubing. Generally, best results for hot bending or twisting copper and copper alloys are achieved at red heat. Bending and twisting above and below red heat are possible but extreme care must be taken to prevent edge cracking. Any cracks which develop are usually from forging not bending.

Tools are from the blacksmithing and silversmithing industry and are pre-World War II. They have been modified and adapted as the need arises. The only limitations of a tool are imposed by the user.

WORKING TECHNIQUE

The techniques of hot forging and upsetting of rod stock are not unlike silversmithing, with the exception of the observations made earlier related to the heated metal itself. A variety of tongs and vise grips are used to securely hold the work. Extra metal should be allotted to allow for possible scarring from the tongs. The use of water to cool the adjacent metal as done while working hot steel is helpful because of the excellent heat conductivity of copper. Localizing the heat is the key to efficiency (photo D).

The hot forming techniques of sheet and tubing will be considered first. Again concentrating and localizing the heat to the specific area to be worked is necessary. This enables you to work the metal on itself. The metal which is not in red heat will be more resistant to shaping and that which is red hot is more plastic. Because of the circular cross-section of tubing, working around the circumference evenly by sinking or snarling results in uniform controlled forming. Obviously, any forming on supporting mandrels, stakes or dies is very desirable, but make sure no sharp metal edges are used. Great care must be taken with all hammers and surfaces of metal because the hot metal cuts very easily or can rupture from a knick in its surface while stretching.

Sheet may be formed rapidly by sinking or danping into a sand box, wood depressions in the end grain of a log section, or in laminated dies of composition board. Lead blocks, swaging blocks or any discarded metal forms (car bumpers) are varied and excellent for dies (photo E).

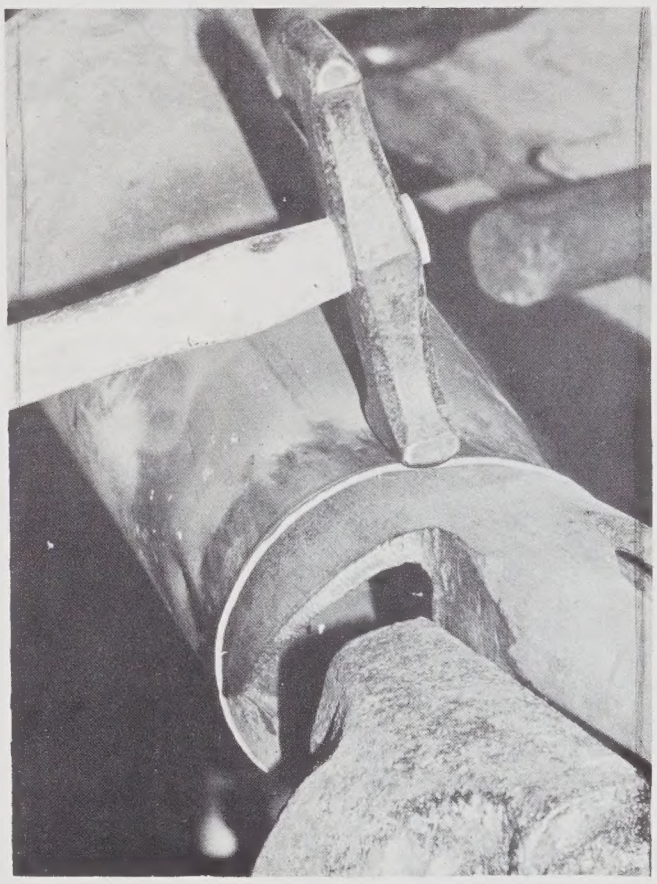
"Photo E" — Forming copper relief on swage block, photo by Tom Moore

TOM MARKUSEN

"Photo F" – Hot pressing copper, photo by Tom Moore

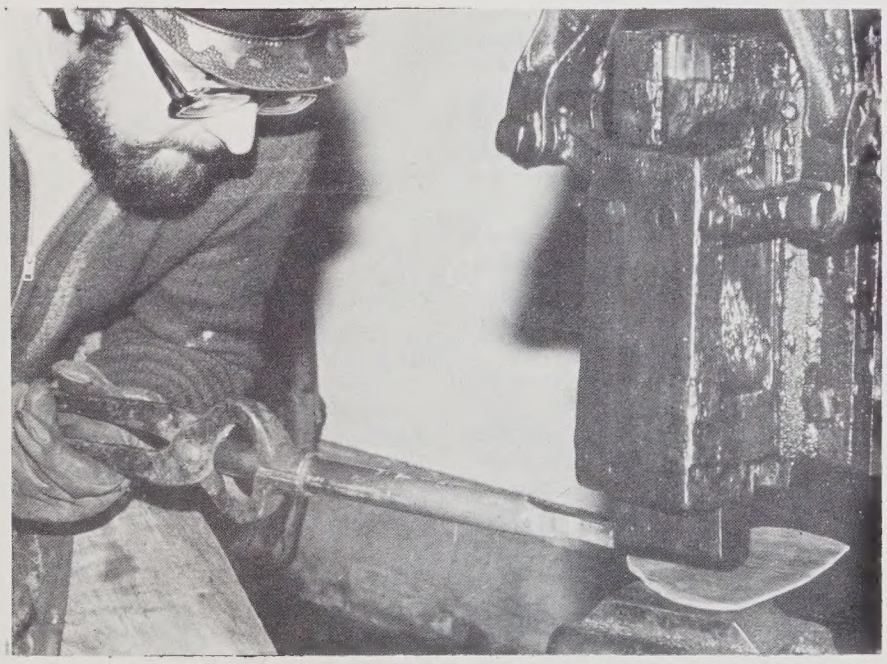
"Photo H" – Stretching 14 ga. copper tubing, photo by Tom Moore

"Photo I" – hot cutting copper tubing



Stretching obviously takes place when dapping and sinking, but when using thicker gauge stock (14 ga. and thicker) controlled stretching or pressing is done. The resulting metal flow using these techniques at red heat results in an expedient process to achieve volumetric forms (photo F).

Care must be taken to maintain a uniform wall thickness. Traditional and altered stakes and anvils are used as supports. Power hammers like the "Little Giant" with a flat anvil plate and a ball peen drop head save a great deal of hand work (photo G).



"Photo G" – Stretching copper on little giant power hammer, photo by Tom Moore

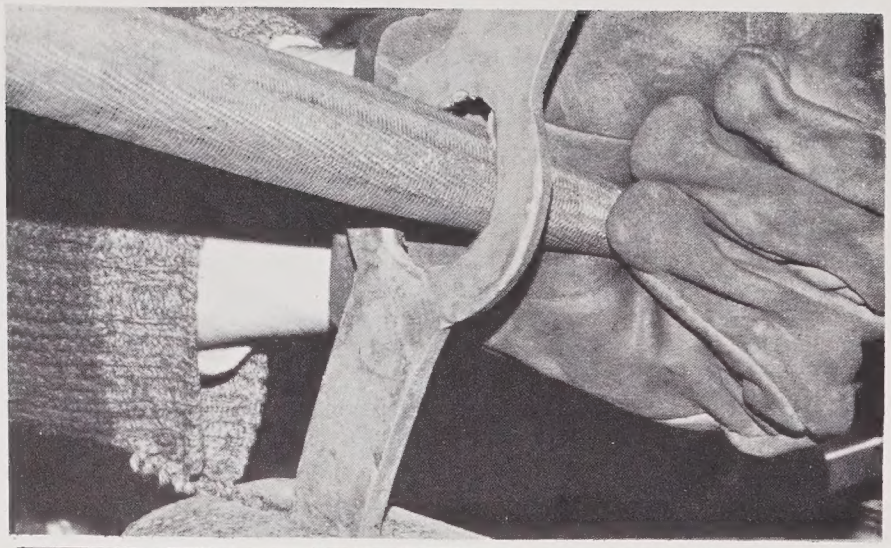
Angle raising is less efficient but can be occasionally used. Handling has been the greatest drawback to date. The best use is with tubing where you neck or splay the ends on a conical stake or mandral (photo H). Make sure the end of the tubing is filed smooth as any cut or notch will result in lateral cracking.

At a red heat bending and twisting usually can be accomplished in one heat. Make sure all the tools used are absent of sharp edges or serrated surfaces. A copper, lead or hard wood mallet is suggested when adjustments are needed. Cooling with water is again helpful to maintain or prevent bending and twisting to achieve uniformity.

The application of hot cutting, chiseling, piercing, and punching offers an immediate and direct process to the metal (photo I). The visual result of these techniques illustrates the hot plastic state of the metal. Stamping and chasing are also approached by the same application. The working temperature range is dull red to red-orange (1250 degrees to 1600 degrees F and 625 degrees to 900 degrees C). Although these techniques can be executed throughout this range, it is recommended to hot cut, punch, pierce and drift open thicker stock in the upper half of the temperature range (bright red to red-orange).

The ironsmith utilizes hot rasping to remove excess material and refine the piece before it cools below red heat. Copper and copper alloys may also be worked this way to expedite the process. The surface resulting from this technique offers various textural possibilities as well **(photo J)**

When executing these techniques it is suggested to wear gloves because the hand handling the tool is close to the work and valuable time is lost if the piece loses the proper heat before completing the operation. Longer stamps and chasing tools help avoid working too close to the hot metal. A saddle of mild steel to fit on the top plate of the anvil will protect it. This provides a surface which will not harm hot cuts and punches when penetrating through the stock. The final punching is done over a slightly larger hole than is being made (pritchell hole on the anvil is well suited). Constant cooling of the tool in water is needed so the temper is not drawn out while working the hot metal.



"Photo J" — Hot rasping copper, photo by Tom Moore

FABRICATION

The methods of hot fabrication have not yet been fully developed, but several possibilities are apparent. It is possible to chisel and chase to make channels for inlaying. In addition, the metal can be placed in a heated channel so that as the piece cools the contraction will secure the inlay. Hot riveting and collaring will tighten as the metal cools. Upsetting, crimping, or thickening the edges of nested tubing will contract as it cools thus providing a secure fit. Many other hot joining methods are possible with the shrinking concept. Variations of the open end mortise and tenon, interlocked and folded tabs offer possible hot joining techniques. Utilization of sheet metal crimpers, folders, stretchers and rollers offer additional interesting possibilities.

FINISHING

The finishing application ranges from the surfaces which are a result of the working process to the surfaces of traditional silversmithing. Wire brushing at dull red heat will provide a clean surface upon completion of the work. If the working oxidation is to be removed, the piece at this point is placed in a heated pickle solution. Wire brushing the oxidized surface patina, softly burnishing with a paste wax as a sealer and retaining the process marks as a final texture results in a direct statement (photo K). This is in contrast to a refined sanded and buffed reflective surface.

SAFETY

Normal safety procedures should be practiced with the addition of leather gloves, a heavy leather apron and above ankle work shoes with steel toes. High inpact safety glasses with side shields are a must. There is no need for tinted lenses unless working with oxygen and acetylene as a heat source. Ear plugs are usually overlooked, but should be used for prolong periods of hammering and while using any power hammering devices. A severe burn medication or a source for ice should be available. In the past, many blacksmith shops had broad leaf "aloe Ciliaris" succulents which contain a milk solution that could be applied to burns by breaking off a leaf.

"Photo K" — Detail of table lamp— 4" copper tubing snarled and dapped with hammer worked surface, photo by Tom Moore

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Presented at the Society of North American Goldsmiths Conference in Seattle. These technical papers also appear in issues 13-16 of the Goldsmiths Journal.

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METALLURGY/SILICON BRONZE
by HERK VAN TONGEREN

(courtesy of Sculptor's News Exchange Dec. '77 issue)

Metallurgy has always been a dark area for most art founders. Usually once they have developed a working knowledge of a certain alloy they stay with it. About four years ago I settled on what is often called "Everdur". It's considered to be a silicon bronze (more silicon than zinc denotes a silicon bronze, whereas more zinc makes it a silicon brass), but the name "Everdue" does not refer to any specific chemistry.

After talking to several metallurgists who were unable to solve our specific problems, R. Lavin & Sons, Inc., of Chicago, a smelter I knew and respected, was contacted. My call was returned by metallurgist, Donald G. Schmidt, who came to the Atelier to help us solve the problems with "Everdur".

The bulk of the following information was gleaned from Don Schmidt during his visit to the Atelier.

Silicon bronzes were developed in the 1930's. Essentially they all have 4% silicon content; a higher percentage results in brittle silicon. Initially iron, tin, manganese, and zinc were introduced into the metal, but the addition of zinc with manganese is not necessary. Manganese is a deoxidizer and enhances the physical properties of the metal. The very low level of zinc makes this alloy ideal for vacuum casting. "Everdur" has an intermediate freezing range of 120 to 150 degrees.

At this point we should define a good special silicon bronze alloy:

copper-94.00%-approximately
tin-.02%-maximum
lead-.02%-maximum
zinc-.25%-maximum
nickel-.2%-maximum
iron-.5%-maximum
silicon-3.5 to 4.0%
manganese-1.0 to1.5%

Apparently our problems occurred with greater percentages of the trace metals. If the smelter uses No. 2 copper, more lead and tin will be prevalent. Lead does not go into solution with copper and therefore rises to the surface of the casting. Traces of iron which come from the silicon are also not soluble if there is more than 1% present. These trace metals will appear as oxides or inclusions on the surface and are particularly troublesome in a polished piece. If approximately two tenths aluminum is added at the end of a melt, it will improve the surface somewhat by preventing the lead from coming to the surface. However, if this surface is blasted off, the inclusions and oxides etc., will show.

I have seen ingots swell up like loaves of bread and large bubbles form on the cups after pouring. These gases can come from a number of sources. At high temperatures water vapor splits into hydrogen and oxygen; the hydrogen idssolves into the metal and the oxygen forms oxides by combining with components in the metal. As a casting cools, the hydrogen is forced out, causing porosity. Another source of hydrogen in silicon bronze occurs if electrolytic silicon is used instead of pure silicon. During the process of electrolysis, hydrogen is formed and is thus contained in the silicon.

It is very important to melt with an oxidizing flame, but merely looking for a green flame above the furnace is not enough. The gas is picked up by the metal when it reaches a fluid state. At this time it is advisable to take a piece of zinc or aluminum and hold it at the top of the crucible. After five to ten seconds it will turn black if the fuel is not all being burned off. The metal will pick up more gas on a humid day, which, in some parts of the country, is hard to control. It is important that the metal not be heated over 2200 F — if this does happen, let it cool naturally.

Metallurgists recommend no fluxing or degasing with silicon bronze if the melt is properly handled. Lavin does have a degaser called alloy No. 7 which is basically: 76% copper, 7% aluminum, 5% magnesium, 1% iron, 6% titanium. The procedure for its usage is to remove crucible, skim it and stir in the degaser. Use 1/3 of a pound to a 50 pound melt.

Once silicon bronze has picked up gas, it may take several careful oxidizing melts to reclaim it. Introducing DRY nitrogen through a graphite lance will help by mechanically carrying the hydrogen out. This procedure takes seven minutes for fifty pounds or over. It should be done before pouring, keeping in mind that it lowers the temperature of the metal.

Dry oxygen is even better than dry nitrogen because it actually mixes with hydrogen. It takes about a minute and a half to degas and does not change the metal composition.

Filling the crucible no higher than two inches from the top rim is advisable so that you will not have to pour from too far above the cup to prevent spilling. If the pouring distance is too great, oxygen will be pulled into the sprue.

This leads us into gating which has a pronounced effect on the castings and must be considered when analyzing casting problems.

An excellent pocket reference for general casting information is:

Foesco Foundryman's Handbook

published by: Pergamon Press

(Send $8.25 and $.75 postage to: Maxwell House, Fairview Park, Elmsford, NY 10525.)

I have been referring to my copy for several years and have found it to be useful, although it does lack specific information on silicon bronzes. However, it is very comprehensive in many other areas and in my opinion it is $9.00 well spent.

FIVE-HUNDRED ARTISTS HIRED IN NEW YORK

A program recently administered by twelve non-profit organizations, including the Foundation for the Community of Artists, hired 500 unemployed performing and visual artists in New York City for one year, beginning in January 1978. The artists will provide community services in their own specialty at an annual salary of $10,000 for a 35-hour workweek. The money was appropriated by the City under a 6.4 million dollar federal grant.

AMERICAN CRAFTS TO BE SOLD IN GSA STORES

(courtesy of *Craftsmen Information Bulletin*)

Some of the best news to come out of Washington, D.C. about the crafts occurred on October 17, when Jay Solomon, Administrator of the General Services Administration, announced that American craft items will soon be appearing in federal offices. Solomon stated that a limited line of American handicrafts has been introduced on a pilot basis into three of the agency's self-service stores from which federal employees procure a large amount of their office supplies. . . .

GSA fine arts, design and procurement personnel chose the crafts now in the stores after consulting the Crafts Coordinator of the National Endowment for the Arts and other leaders in the field, seeking advice on sources for the products wanted and guidance in selecting items.

Implications of the pilot program can be seen in Solomon's comment that, "If this project shows promise and we expect it will, we'll expand it throughout our 75-store network in federal buildings nationwide. . . This endeavor has several objectives. We want to encourage and support the American crafts industry by expanding market opportunities.

Anyone wishing more complete information on the General Service Administration's new crafts program can contact the Public Affairs Office, U. S. General Services Administration, Washington, DC, 20405.

Don M. Johnson, studio-detail

"The major visual stimulus for work during this period was the isolation of the open spaces of the Montana landscape . . ."

DON JOHNSON

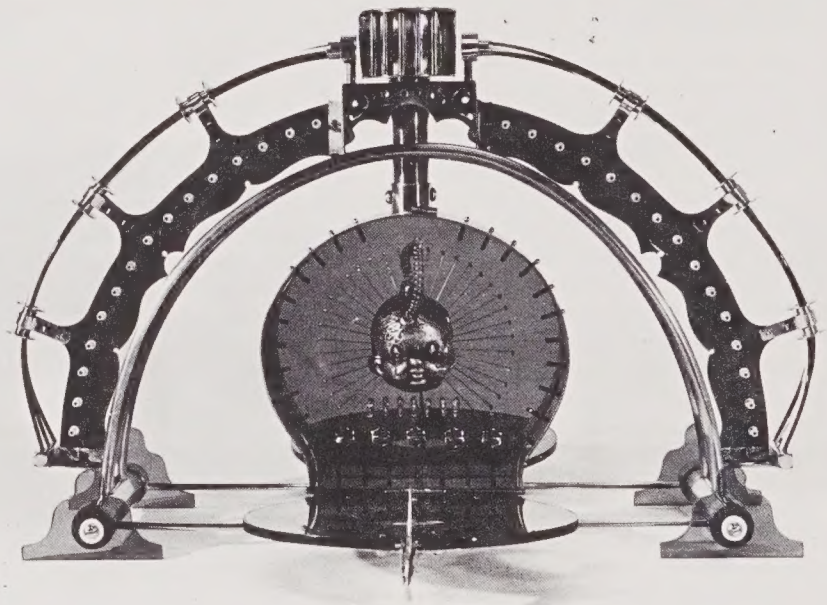
Biography by Carolyn Seifert

Don M. Johnson, "Arc of Perfection", brass, copper, silver, plex, 13"x9"x3½"

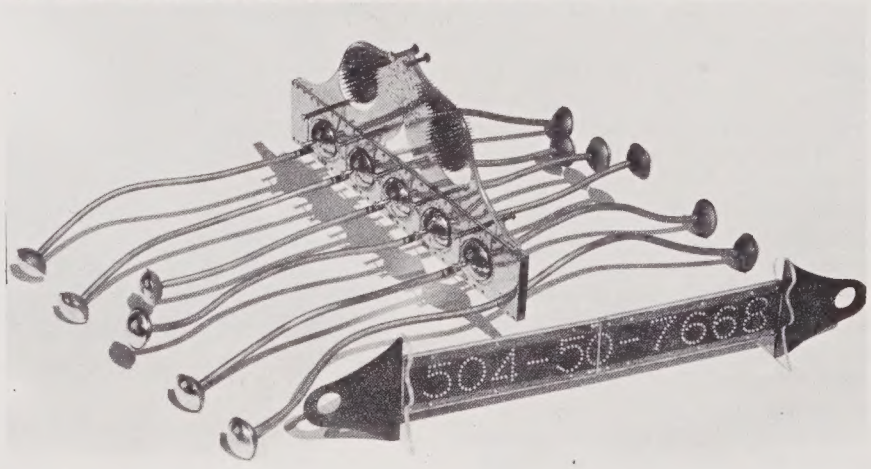
Although Don Johnson has taught metalsmithing at the State University College at Oneonta, N.Y. since the fall of 1973, he speaks and moves as if he were still in the open spaces of Montana, where he was born in 1947. Until 1973, Johnson had lived, studied, and worked in South Dakota and Montana. He began his undergraduate career as an architecture major at Montana State University in Bozeman, Montanta, but found that the restrictions imposed by engineers, patrons, and the law on the architect stifled his own creativity. On the other hand, he found that the required courses in design and drawing offered an opportunity for autonomous creativity. After a year, he transferred to South Dakato State U. in Brookings, S.D. Here, Johnson experimented with all media, except metalsmithing, and received a B.S. in Fine Arts in 1970.

In the fall of 1970, he returned to Montana U. to begin his M.A.A. degree. Majoring in ceramic sculpture, it wasn't until the second quarter of his first year that he was exposed to metalsmithing under the instruction of Richard Helzer. His interest in metalsmithing evolved naturally out of his involvement in ceramic sculpture. Experiments with metallic lustre glazes suggested metalwork. In addition, he discovered that his ideas could be executed on a smaller, lighter scale, and that the industrialized, geometric forms not possible in clay were inherent in metal. Metalsmithing combined the plasticity of clay and geometric possibilities in a more durable form.

Although his thesis exhibit consisted of both metal and clay works, Johnson never combined the two media. By no means a purist, Johnson is interested in finding and adapting new materials to his technical vocabulary to express new ideas. During graduate school he began experimenting with plastic tubing which combined the malleability of clay and the tensile strength of metal and, at the same time, gave added flexibility to his metalwork. These qualities are evident in the umbilical cords of Johnson's "Peoplesville U.S.A. II". In retrospect, Johnson feels that he has been subconsciously influenced by clay as a plastic medium. During this period,



Don M. Johnson, "504-50-7668", brass, copper, plex, 18"x21"x7"

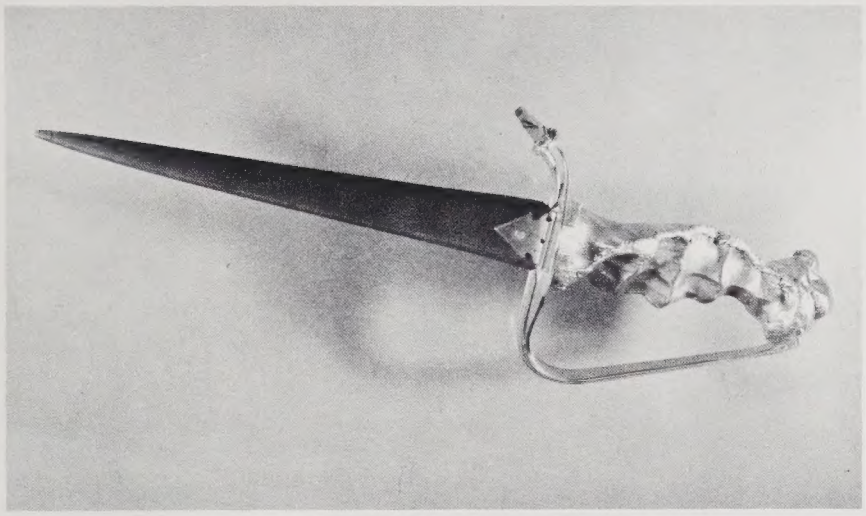


his primary source for new materials was the Montana Quality Wholesale, a ranchers' hardware store, where various implements offered new technical and visual possibilities. The major visual stimulus, however, for his work during this period was the isolation of the open spaces of the Montana landscape which Johnson describes as "solid nature".

After his graduation from Montana State in 1972, Johnson produced custom jewelry in Great Falls, Mont., an experience he sums up as "stimulating, time-consuming, and educational". Although he was financially successful, he found, as he had as an architecture student, that satisfying the customer resulted in the same loss of autonomous creativity.

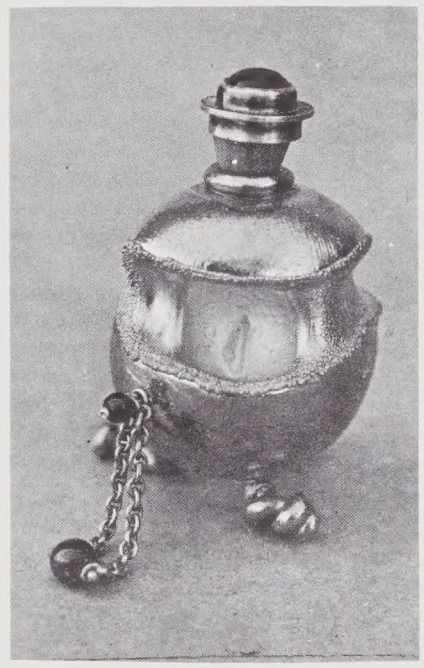
It was during the fall of 1973 that Johnson moved east to Oneonta, N.Y. to become an instructor of metalsmithing in the Art Dept. of the State University College. After five years, he is able to evaluate the consequences of this relocation on his work. While the relative isolation and natural beauty of this rural area made the environmental transplant easier, his first trip to New York City was nothing less than a culture shock. The contrast of his previous environment of pure nature to an ultra-urban world of concrete and glass resulted in a "visual overstimulation". On Canal Street, Johnson found an endless source of new materials to express his new feelings and ideas — tools, paint, industrial items of glass, plastic, metal, and damaged surplus. Johnson marks his first visit to New York City and his discovery of the resources of Canal Street as the beginning of his sculpture of mixed materials.

Concurrent with his first contacts with this megalopolis was the emergence of new themes that could be visually expressed with the industrial forms found on Canal Street. Although he had admired and worked with clean, geometric forms in Montana, he had never experienced the visual and psychological consequences of a technological society. The claustrophobia of the city's buildings and people suggested themes of overpopulation, abortion, anonymity, and, more important for the artist, the loss of individual creativity that results when man has lost control over his environment. Johnson says that his ideas were preconceived, and that it was on Canal Street that he found the colors, textures, forms and objects to express these themes. For example, in the piece entitled "504-50-7668" (Johnson's social security number), the circuitry plates and the plastic tubing are used to express not only the anonymity of the individual, but the impersonal control of machines over man. During this period, the film *The Clockwork Orange* seemed to be the most poignant visual expression of his fears. Johnson feels that these earlier works were sometimes too serious, and now consciously tries to inject a bit of humor into his work, emphasizing the positive as well as negative aspects of a particular theme. The bellicose quality of his "Dagger" (1977) is softened by the vulnerability of the phallic handle. Just as *The Clockwork Orange* expressed his earlier fears, Johnson finds that *Star Wars*, in which mechanical objects are humanized, is the cinematic counterpart for the organic, whimsical quality of his more recent work. The fact that both of these films deal with the same themes found in Johnson's work illustrates the basic philosophy behind his art work. While technical skill can be acquired and perfected, he believes that the creative idea is the most important element in his work. This includes for him, of course, the selection of the precise form to best express the idea. Therefore, interdisciplinary action is a necessity in the development of his creative ideas. In addition to film,



"While technical skill can be acquired and perfected, he believes that the creative idea is the most important element in his work".

Don M. Johnson, "Dagger", brass, forged steel, 12"x3½"x2"



Don M. Johnson, "Perfume Bottle", gold, copper, garnets and carnelian, 2"x1¼"

Johnson has been influenced and stimulated by the works and ideas of Salvador Dali, Wm. T. Wiley, Lucas Samaras, and, historically by the metalwork exhibited in Cloisters in N.Y.C. In his own work, Johnson has revitalized the idea of the Medieval reliquary into a form which expresses its contemporary contents, such as "Poem Box", a container for the love poems from his wife, Deanna. Because he has remained open to a wide variety of intellectual, visual, and historical stimuli, Johnson's work is characterized by a personal, interpretation of universal themes that are relevant to contemporary society.

DON JOHNSON'S OBJECTS "RELIQUARIES IN THE AGE OF FUTURE SHOCK" (Edited)
by Jerry Clapsaddle

(Editor's Note: Reviewed at the Tyler Art Gallery, SUNY College at Oswego, February 12-March 2, 1976.)

"In the past, permanence was the ideal. Whether engaged in handcrafting a pair of boots or in constructing a cathedral, all man's creative and productive energies went toward maximizing the durability of the product. Man built to last."[1] . . .

As these works are exhibited in an art gallery (the substitute for the Church) rather than in a jewelry store, their elevation as objects of art suggests that their contemplative content (the reliquary's justification for existence) is more important than their function as containers or even as skillfully made objects d'art.

Johnson's objects are obviously containers, but one is lured into the conscious act of examination only to discover that the "content" in the conventional sense of a relic is not there. Elaborate and innovative openings, lids, hinges, clasps and joints seem to exist more for the engagement of the eye and mind rather than for the simple physical function these elements ordinarily serve. Hinges and lids do open, clasps lock, and joints connect, but what is more interesting are the connections suggested in the mind and the unlocked, vulnerable relics one finds there. . . . .

In a turnabout of the human figure as a cabinet of the mind, Johnson mounts a cast sterling silver head of an infant in the rotatable core of his plexiglass, copper, brass and enamel ARC OF PERFECTION. This work carries a heavy psychological impact by evoking issues that range from societal and private responsibility for fetal life to the actual and speculative institutional use of physical and chemical "behavior modification." While the piece is visually a beautiful shrine-like "vehicle of grace," the strength of this work is in the literally open-ended, double-sided presentation of these emotion-laden issues in a way that forces the viewer to think and feel.

As did the Surrealists, Johnson presents incongruous objects and dream images in a non-contextual arrangement in order to reveal a truth that can't be explained by logic. 504-50-7668 is a tilting vehicle on rippling centipedal tentacles which carries the artist's most mundane, but vital figure. This number is presented in slide rule formation and is revealed through individual see-through peep-scale portholes covered on both sides by doomed hatches. The exalted significance of this personal identification, whose owner is accountable neither for its origin nor its use, is frightfully objectified. . . . .

Johnson, like Dali in his painting, utilizes in his metalwork a meticulous technique in making a highly refined and finished fact the most subjective and complex of fantasies. Johnson's work is materially characterized by contrasts of the brilliant glitter of silver-plated projecting rivets penetrating the sleek glowing translucency of magenta plexiglass or by the electroplated pattern of silver over the blaze of burnished brass amidst the warm matte uniformity of sinuous copper tubing. The qualities of these materials and finishes are used in a layering of associations on the forms that they make. . . . .

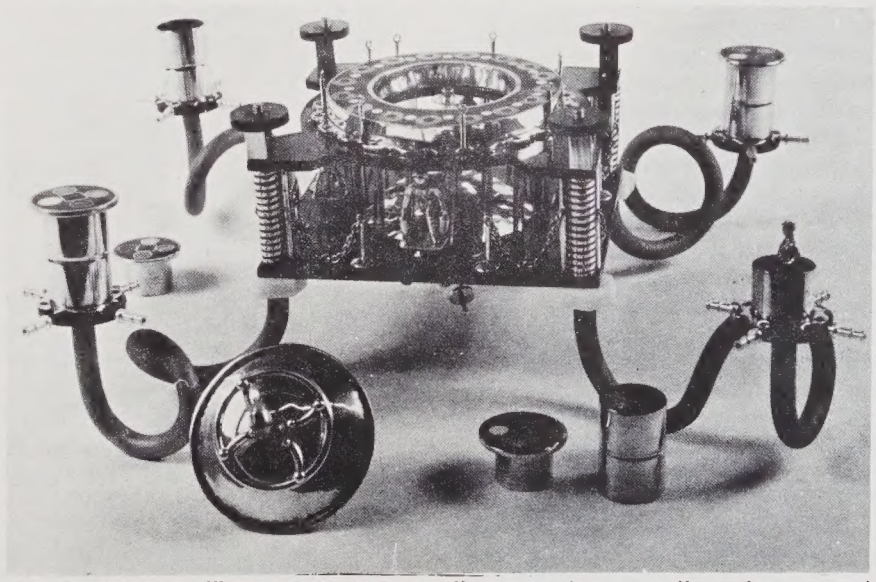
There are formal and technical echos of traditional reliquary art in the underlying neo-classical order of PEOPLESVILLE U.S.A. II with its overladen hierarchy of symmetrical multi-media embellishments. This work combines brass, plexiglass, and moonstone in a candelabra/circus carousel form with tiny cast sterling astronauts guarding other figures representing a cross-section of society hidden within individual enameled satellite capsules. These are connected and supported at the end of lifeline-like sprung coils of copper tubing in such a way as to make every element appear to hover in space. As this description suggests, there are both literal and symbolic relationships between figure and material, form and content, order and technique.

Johnson shares with many artists a distrust of the universal forces toward standardization. Dali believed that the potency and duration of his work ("hardened dreams") "can resist the hideous mechanical civilization that is your enemy."[8] Johnson has used the decorative redundancy of glittering projecting metal rivets as a metaphor for the pervasive extravagance of 20th century technology that forms the container of our lives. In ARC OF PERFECTION and in SURVIVAL VACUUM Johnson exploits the optimistic, glorifying cliches of Buck Rogers-Captain Video-Star Trek-2001 futurism in order to cast a sort of nostalgic mass culture gloss over images that are personal and foreboding.

Change is one of our constant threats. It is both ironic and appropriate that Don Johnson has chosen this craft of permanency, making reliquaries, as a container/vehicle for his art about threatening social and personal change.

Alvin Toffler in his book FUTURE SHOCK defines his title: "It is a concrete force that reaches deep into our personal lives, compels us to act out new roles, and confronts us with the dangers of a new and powerfully upsetting psychological disease."[9] One may also use this definition to describe the effect of Don Johnson's art which challenges the viewer by evoking feelings that threaten the security of his values.

(Editor's Note: Footnotes are available upon request to the Journal.)



Don M. Johnson, "Peoplesville U.S.A. II", copper, brass, sterling, plex, enamel with moonstones, 12"x12"x3½"

A METALLURGICAL ANALYSIS OF THE LAMINATION OF NON-FERROUS METALS

by JOHN C. McCLOSKEY
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In a recent article[1], Pijanowski and Pijanowski described an experimental investigation of the preparation of Mokume Gane (wood grain metal) by traditional Japanese techniques. Laminated metals are a significant commercial product and large quantities of composite materials which utilize ferrous, non-ferrous, and precious metals in the same assembly are common. It is both challenging and instructive to attempt to apply well-founded metallurgical principles which have been developed for industrial requirements to the requirements of the traditional craftsman.

This analysis is an attempt to increase the depth of understanding of the behavior of a relatively complex material system when subjected to elevated temperatures. The approach to better understanding focusses on (1) the development of a method for characterizing the nature of a laminate in terms which are simple, yet meaningful and (2) an understanding of events which occur when a laminate of different materials is exposed to elevated temperatures.

Reduced Composition of Metallic Laminates—Metallic laminates are first assembled by stacking different metals in alternate layers to some overall desired thickness. Although such an arbitrary assembly of metals might seem to appear to defy unique description, I submit that a unique and necessary description of such an assembly can be easily developed. This description can be developed by recognizing that if such an assembly of metals were melted and completely mixed, an alloy of unique composition would result. This mixing and alloying can be done mathematically.

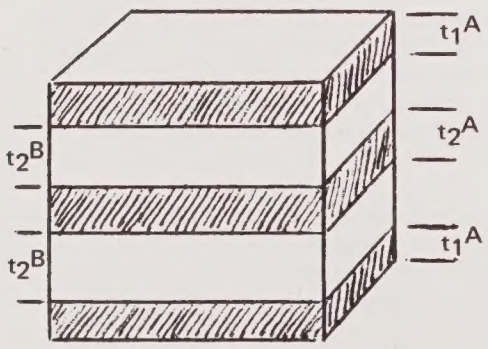


Figure 1. Schematic diagram of a laminated assembly of metals A and B of different thicknesses, t_1 and t_2.

Figure 1 is a sketch of a laminated assembly of metals A, and B. The thickness of individual metal sheets are indicated by t_1^A, t_2^A where t_1, t_2 are individual thicknesses of metal A. The percentage of metal A in the total assembly can be determined by the relationship

$$\%A = \frac{(2t_1^A + t_2^A)\rho_A}{(2t_1^A + t_2^A)\rho_A + (2t_2^B)\rho_B} \times 100$$

Where ρ A, ρ B are the densities of metals A and B, respectively.

If the densities of metals A and B are very similar, equation (1) can be reduced to a simpler form. This is:

$$\%A = \frac{2t_1^A + t_2^A}{(2t_1^A + t_2^A) + 2t_2^B} \times 100$$

OR

$$\%A = \frac{2t_1^A + t_2^A}{\text{TOTAL THICKNESS}}$$

Some judgement is necessary in deciding what thicknesses must be included in equation (1) when calculations are done. If all thicknesses are essentially equal, then all must be included. If one or two thicknesses are four to five times greater than the others, it would be appropriate to neglect the heavier thicknesses without affecting the prediction of outcomes based on this total proposal.

Phase Equilibria—With a capability to characterize a complex system of laminated metals by a single, unique number, it becomes possible to predict and control what will happen to such a laminated assembly when heated to an elevated temperature. This prediction requires the use of a phase diagram, a very common tool for the practicing metallurgist. A phase diagram explains in graphic terms what happens to alloys as they are heated to different temperatures. The use of the phase diagram will be introduced after an explanation of events that occur when a laminated assembly is heated.

When laminations of different metals are heated, diffusion begins to occur across the plane of contact between the two metals. It is possible, although extremely tedious, to calculate the rate and extent of this diffusion. For the purposes of this discussion, it would probably be a useless exercise to pursue such calculations. As the different metals diffuse into one another, intimate mixing occurs and a range of new alloy compositions starts to form. After sufficient diffusion and alloying, a particular composition is reached at which melting occurs for the particular temperature of heat treatment. This highly localized melting near the plane of original contact between metal layers is surely the "sweating" phenomenon observed during the preparation of Mokume Gane.

It is proposed that by referring to basic data, the extent of sweating can be controlled to the point where high quality material can be reliably produced with minimum waste and loss of precious metal.

Figures 2 and 3 are phase diagrams for the alloy systems copper-gold and copper-silver. These diagrams present significant information about what happens when alloys of different compositions are heated to elevated temperatures. For example, in Figure 2, the silver-copper phase diagram, an alloy of copper-10% silver partially melts when heated to 800 C. This is indicated by the point of intersection of the 10% line of composition with the 800 C line of temperature. This point is in a field labelled α and L, where α designates solid metal, and L designates liquid metal.

It is possible to calculate the weight fractions of solid and liquid metal that co-exist at different temperatures for alloys whose composition limits fall within the boundaries of a phase field. These calculations have been done and are presented in Figures 4 and 5 for copper-silver and copper-gold alloys. For example, Figure 5 indicates that a silver alloy containing 15% copper is in a condition that is 30% liquid-70% solid when it is heated and allowed to come to thermal equilibrium at 822 C.

Application to Mokume-Gane—It is suggested that the preceeding principles can be applied to the preparation of Mokume-Gane by the following procedure. [1] Determine reduced composition of a laminate assembly. [2] Prepare laminate assembly for bonding, paying particular attention to maintaining absolute cleanliness at interfaces to be bonded. [3] Wrap and bind for firing. [4] Determine firing temperature as that temperature at which an alloy of the reduced composition will be 30 to 50% liquid. [5] Heat laminate assembly to firing temperature and hold for sufficient time to permit equilibrium partial melting to occur. [6] Cool and forge.

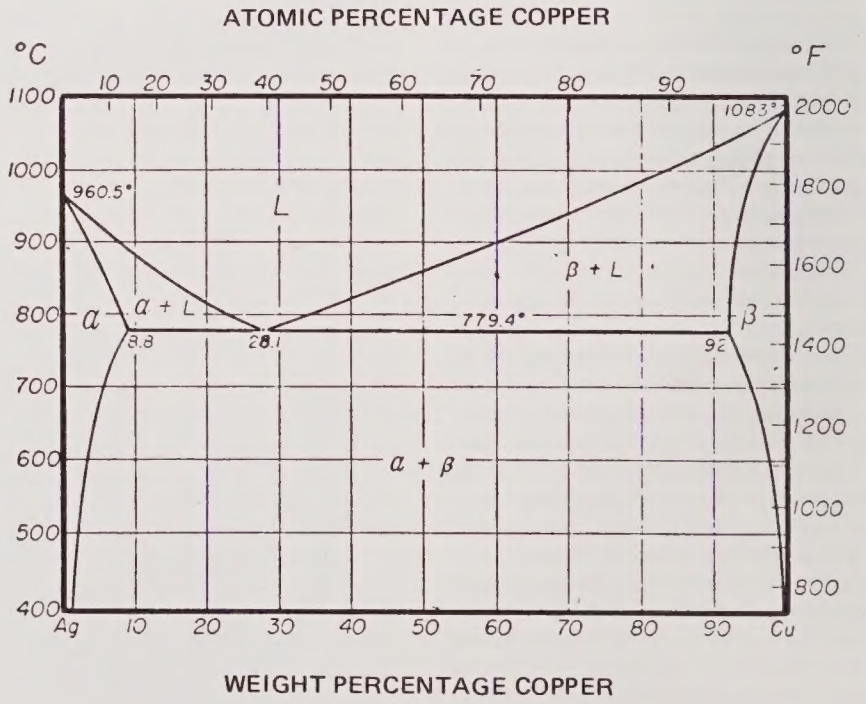
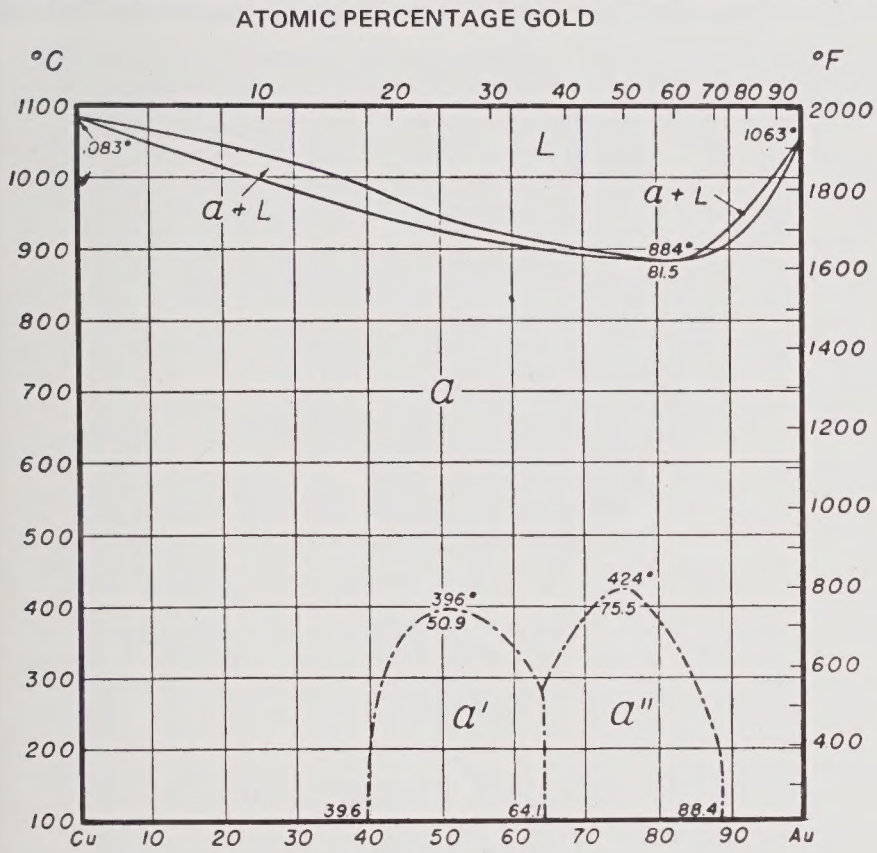


Figure 2. Phase diagram for the alloy system copper-silver. (Metals Handbook, ASM)

Figure 3. Phase diagram for the alloy system copper-gold. (Metals Handbook, ASM)



Discussion—The objective of this analysis is to achieve improved control over the process which is used in the preparation of Mokume-Gane. The metallurgical principles are sound but the application of these principles are left in the hands of the individual craftsman. Sound judgement and the experience of the craftsman will be required to refine the application of these principles. For example, it is conjecture at this point that the temperature at which sweating should be promoted is in fact the temperature which will produce 30 to 50% liquid in the assembly. Only experience can determine the optimum temperature.

The experimental data and results of the Pijanowskis in fabricating Mokume-Gane can be evaluated against the proposed principles. Before this discussion, it must be stated that for successful fabrication of Mokume-Gane, accurate control over temperature is critical. In the Pijanowski test 4, there is melting evidence that the actual temperature of firing was 100 to 110 C greater than the indicated temperature.

In test 5, the reduced composition of the alloy has been determined to be copper-25% gold. For purposes of calculation, the thickness of a 6 MM back-up layer of copper was neglected Figure 4 indicates that an alloy of 25% copper is 30 to 50% liquid over the temperature range 1013 to 1020 C. When the material was prepared, sweating was observed at an indicated temperature of 920 C. The actual temperature was probably 100 C hotter, or 1020 C. The material in this test was raised into a finished piece.

In tests 8 and 9, the reduced composition of the laminate assembly has been estimated to be copper-36% silver. An alloy of this particular composition allowed to equilabrate at 780 C will contain only 12% solid and 82% liquid. Below 779 C. melting cannot be promoted by diffusion and this would appear to be a very difficult laminate assembly to successfully bond. If heated above 780 C, extensive melting would occur to such an extent that a "puddle" of fully melted alloy would probably result.

Experimental results described in the Pijanowski's test 8 in which an assembly was heated to 875 C (could have been 975 C) indicates that excessive melting occurred. A similar result was apparently obtained with an assembly that was heated to 790 C (could have been 890 C).

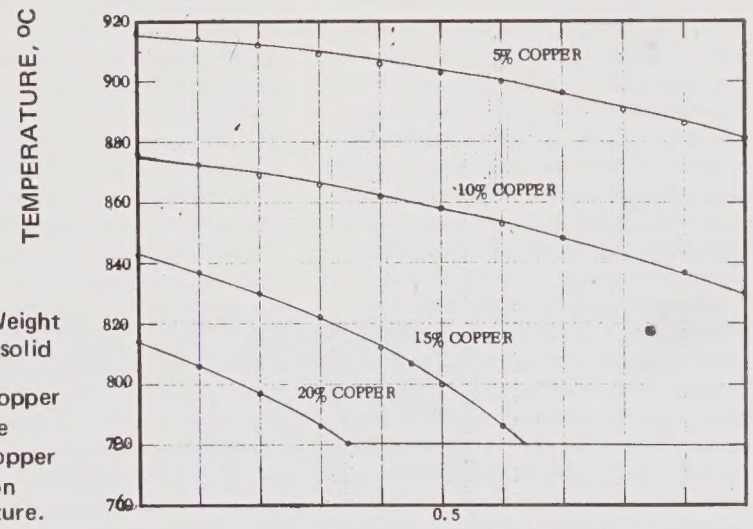


Figure 4. Weight fraction of solid in alloys of silver and copper in the range of 5-20% copper as a function of temperature.

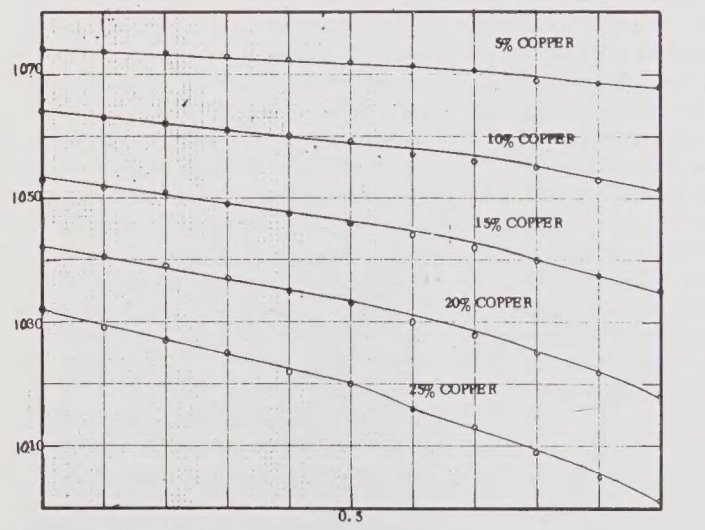


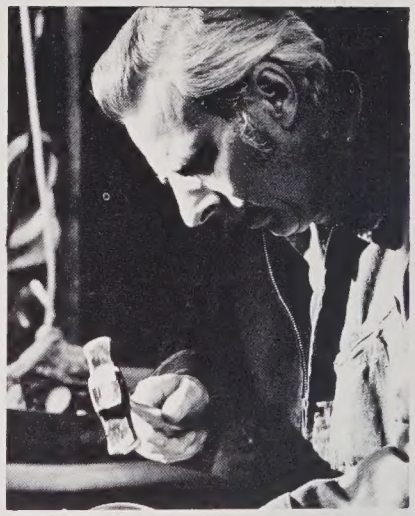
Figure 5. Weight fraction of solid alloys of gold and copper in the range of 5-25% copper as a function of temperature.

Conclusions—There are strong experimental indications that proper firing temperatures for bonding of laminated metals used in the preparation of Mokume-Gane can be predicted based on phase equilibria determined for an alloy with a reduced composition which is equivalent to the weight fractions of individual metals in the laminate assembly. It is recommended that this proposal be evaluated further by the preparation of Mokume-Gane under controlled conditions and the subsequent developments of a critical comparison between actual results and results predicted by this proposal.

1. Pijanowski, H. S. and Pijanowski, E.M., *Goldsmiths Journal*, Volume 3, Number 4, August, 1977 (Issue 13), p. 20a.

Edwin Niemi

"I have no interest nor concern as to whether I am an artist. I feel strongly that this will be decided by cultural, social and historical forces beyond my control. . ."



Edwin Niemi, chalice, gold and sterling

ED NIEMI
Autobiography

". . .I felt that this might all be of more value if I wrote where I Live, not where I Lived."

How does one write an autobiography? I remember I had trouble handling that question in the 7th grade and after a valiant try, as I recall, my best effort came out something like this:

"I was born, I live here and my dog got run over by a truck". Nothing has changed all that much and I approach this request with great trepidation. While I am, as is my habit, writing this against a last hour deadline, I wish to thank the editor of GOLDSMITHS JOURNAL for giving me several months to worry about it. This has given me time to think through what I believe to be important events in my development and life as a metalsmith. While I cannot imagine how these events would be of any particular interest to the reader, they have formed the basis for my own convictions and value judgements. My thoughts and biases may not be popular with some readers and you have my permission to quit reading when I gore your favorite bull. Those who bear through to the end should recognize that I have always considered myself as the 'other kind of metalsmith', sometimes of necessity, sometimes by choice and sometimes out of sheer cussedness.

My education bridges both sides of World War II so my basic attitudes were probably formed, or at least heavily influenced by the depression—hard nosed practicality of bread and butter. This followed by the post-war period of euphoric and optimistic outlook had to cause confusion. Consequently, prior to the war my educational plans were completely directed toward practical engineering or mechanical ends. After the war I became a completely impractical art major. This conflict between the practical and emotional worlds continued, and after a full load of the conventional art classes of drawing, painting, printmaking, etc., I knew that I could not spend my life making emotional statements through an art divorced of real world applications. Through this came the somewhat obvious conclusion — teaching the arts and practicing as a studio metalsmith would give me the combination and the blending of both worlds.

Seven of the first ten years of my professional life were spent teaching in the public schools, doing graduate work, and working metal every hour I could find. In the middle of this period I left teaching for three years to do commission selling of heavy appliances. While my education at Wisconsin was certainly a most important developmental step, in retrospect I believe that those years following graduation were a most fortunate happenstance. Prior to that I had been in school all my life except for a three-year hitch in the Navy. The teaching experience left me in the school environment, but it forced me, in a short period of time, into personal relationships with thousands of students, teachers and parents. (More involvement that I have had with people in twenty years of college teaching.) The sales job forced the same type of expansion and contact with a cross section of society in the real world outside of education. Also, it taught me that while money was easy to make, I missed teaching and my work in the studio. When I returned to teaching and metalsmithing, I had a new insight and a better understanding of what was important in my life. Perhaps of most importance, this ten year period gave me the chance to develop my work and also provided an opportunity for many kinds of people to see my work and support my effort. For the past twenty years I have taught metals at the college level — it's been a real experience.

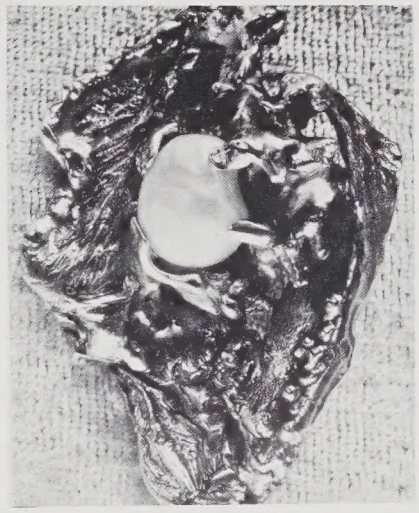
Through all of this, I can now look back at some thirty years of my life as a metalsmith and I can see, right or wrong, that some values are reflected in that body of work. I have always considered myself as a designer who does one-of-a-kind solutions to problems, with a conscious effort to make sure that no two pieces come out with the same solution. I have no interest nor concern as to whether I am an artist. I feel strongly that this will be decided by cultural, social and historical forces beyond my control and it would be a waste of my energy to try to load the vote.

I respect and admire many metalsmiths in this country and abroad who work jewelry pieces of intricate and complex detail, but I discovered long ago that this does not suit my temperament. After working with small tools and torches for a period of time, I wanted to work with a size 12 welding torch and an eight-pound hammer to

get back into balance. Consequently, over the years my work falls into almost four equal parts. One fourth of my time goes into jewelry pieces, one fourth into silversmithing and liturgical pieces, and one fourth in metal design ideas of large scale for architectural applications. The remaining time goes into research pieces and technical studies, usually directed to finding solutions for commissions in which I am involved. Therefore, my work ranges in size from rings to architectural pieces that may involve over ten or twelve foot wall sections.

All of my work is done by commission and, except for experimental or research pieces, I make nothing for exhibition and I never hold pieces for that purpose. To stop cliche type thinking, while I work by commission, the idea, the direction, and the execution are never dictated by the patron or client. Obviously, I don't believe much in competitive shows and when I become king, I will restrict entry into such exhibitions to students and new metalsmiths entering the field. I photograph a very small number (far less than 10%) of my pieces and a client is never shown samples of what I did for someone else on a similar problem.

Edwin Niemi, mans ring, 14k yellow gold, diamonds



"I believe that there is an almost insatiable demand for trained, flexible metalsmiths and eventually our academic system will adjust to this reality and I forsee a new vitality in this, my chosen profession."

Edwin Niemi, pin with pearl, white and yellow gold

Because I teach and have an income from this, I am somewhat embarrassed about having the luxury and danger of being a Sunday Artist. As such it would be very easy for me to do my work at a rate so low that any full-time metalsmith could not compete. In an attempt to keep my work on a fair competitive basis, I use a rule of thumb which sets my price at a level slightly above what would be required if I made my living from the studio — not because I need the money, but because any competent metalsmith can begin to compete at that price. An obvious conclusion — I do not do many esoteric pieces which eat up endless time and have no place to go except exhibitions.

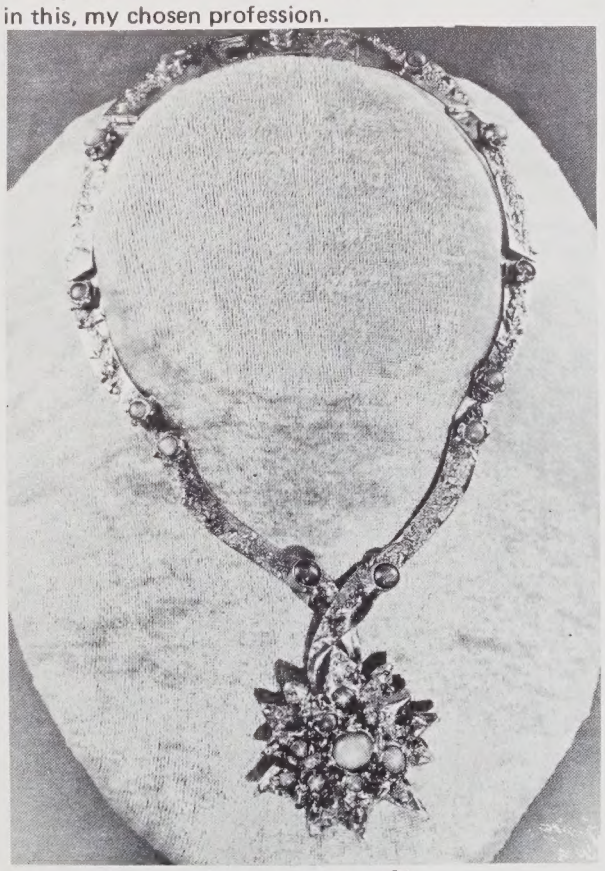
Early in the metals experience, I found that I hate metal finishing and the tedious disciplines that go with subject and imagery treatments, particularly in small, jewelry scale work. Conversely, I am pleased and excited by forms and surfaces that evolve naturally as metal is stressed, strained, melted, burned and in general, pushed to its limits. Perhaps this is my subconscious reaction to life in general. I live in an academic, rather straight middle class world with over-rule and over-discipline as a way of life. In the studio, I like to play god, creating my own rules and my own world of movements, tensions and surfaces. Whatever the reason, I work toward finished effects directly out of the tools, the torch and the metal itself. If a torch will blow a hole or trim an edge, I don't want to be bothered by drilling, sawing or filing, and if the emerging surface or form is new and exciting, I will accept it and modify my direction to it. Perhaps as an extension of my feelings about machinistic disciplines, I find that in my work I avoid any competition with machines. I will use tools and machines to make my statement, but I will not spend my time developing forms, surfaces or parts that a machine can do. When my work ceases to be a new experience with each piece, I'd rather not be a metalsmith any more.

The pieces I create tend to come out as intuitive blends of welding, fusing, casting, granulation, fabrication, and anything else that works toward an end. Tools and techniques are never an end in themselves and most purists don't really understand what I am all about. While I have always resisted anything that could be categorized as a style, those people who know my work can recognize my pieces anywhere, so a style or statement must be there. Looking back over thirty years, perhaps a thousand jewelry pieces and at last count eighty-nine liturgical and architectural works, I can see that I have been almost dogmatic about the values I embrace and damn if I'm not stuck with a style.

The teaching part of my life has always been at least as important to me as my studio activity. There have been challenges and the rewards have more than balanced the frustrations. The profession has granted me access to the best of libraries, the newest of research materials and exhibitions. It has given me the time and opportunity to meet many exciting jewelers and metalsmiths, to travel and to research the museums of Europe and America. Certainly my development as a person, a metalsmith and a teacher have been greatly influenced by these experiences.

I have always held a very idealistic view of what education, particularly college education, should be. In retrospect it seems to me that the educational systems have been, and continue to be, locked in an almost anti-intellectual game plan where degree granting is the end goal. The number of students who come to be taught getslarger, while the number coming to learn is ever decreasing. As this applies to the education of metalsmiths I have observed that we have met these changing demands by printing more 'How to do it books' (almost paint by number) and we have developed courses and curricula to teach a series of 'trick of the week techniques'. It seems we have become so self-conscious about wanting to be artists instead of craftsmen that we are petrified by the thought of working on student's heads and we teach more and more to their hands. As an extension of this thinking (or lack thereof), we should be taken to task in that we have been willing to take students into metals programs while letting them falsely assume that if they do a dozen vogue objects they will be professionals and they can then go to some college to teach the same thing over again. In reality, there has been only a period of less than ten years in which this kind of thinking made sense. Years ago anyone with an honest vision and concern knew that this society could not absorb large numbers of metalsmiths in the context of college professor-artist.

Many accept, I do not, the idea that now universities and government must become patrons of the arts to bale us out and therefore we can continue our business at the same old stand, selling last year's concepts. This is such a comfortable position to take that I see little point in resisting it. For the past few years, and for the forseeable future, I have been content to withdraw from recruiting or encouraging advanced or graduate students who accept this thinking. After higher education takes a good paregoric, I will be very optimistic about the future of the American metalsmith, both in and out of the university. I believe that there is an almost insatiable demand for trained, flexible metalsmiths and eventually our academic system will adjust to this reality and I forsee a new vitality in this, my chosen profession.



Edwin Niemi, necklace-pendant, 18k yellow gold, 14 diamonds, 22 star sapphires

Through my eyes, SNAG and similar organizations in other craft areas will need to play a major role in bridging the past and the future. I am proud and pleased to be a member of this organization and I am impressed and amazed at the vitality of this robust infant, a reflection of good parentage. Those dedicated people who have made the organization should be proud of everything they have done. However, to stay in line with biases I have been expounding, I do feel that those people who are comfortable with what has happened in the universities are molding the organization strongly in the same pattern. It is the easy way to go and SNAG could easily become the 'taste maker' and the official 'academy' of metalsmithing. Ingres and the boys would be happy to know that they were right all the time.

It's done . . . I'm not sure if I have written an autobiography or the 1978 Sermon on the Mount. Perhaps I have over-extended editorial license, my apologies; but I felt that this might all be of more value if I wrote of where I Live, not where I Lived.

HOW TO WORK PLATINUM

(furnished by Platinum Information Bureau)

The working of platinum alloys is similar in many ways to the working of karat gold and silver. Anyone who has worked with these two precious metals should have no difficulty with platinum as long as care is taken to assure the cleanliness of the working conditions. This is especially true when heating is involved.

COLD WORKING

Platinum alloys, like karat gold, become harder and less ductile during cold working. To avoid the possibility of cracking, the metal should be softened by annealing. As a general rule, platinum alloys should not be reduced in cross-sectional area by more than 70 percent between anneals. This percentage represents a reduction in sheet thickness from 1 mm to 0.3 mm, or the reduction in diameter of wire from 1 mm to 0.55 mm.

Annealing. Unlike karat golds and silver, platinum alloys can be safely annealed without taking precautions to prevent oxidation of the alloy and there is no danger of an oxide film forming on the surface.

Heating Method. Furnace annealing is the preferred method for annealing platinum. This method provides closer control over the annealing temperature, and large work pieces can be heated more evenly than they can be by other means. However, annealing can also be done with a blow torch using oxy/hydrogen gas mixture.

Temperature. The stress relief of most platinum alloys begins at 600 C, and the metal softens rapidly at 1000 C. If, during fabrication, work hardening inhibits further work, a quick anneal at 900-1000 C will be required.

Where very thin sections are involved, or where a component is in a highly stressed condition, it may be found beneficial to stress relieve the metal before taking it up to the annealing temperature. Platinum alloys can be stress relieved by heating to between 500 C and 600 C and holding at this temperature for a few minutes.

Stress relieving may also be necessary for thin or highly stressed items before they are subjected to localized heating as in soldering.

Time. The time at temperature will depend on the sectional thickness of the work, but about one minute should be sufficient for thicknesses up to 2 mm. A proportional increase in time should be given for thicknesses above this figure.

Caution. Annealing at too frequent intervals can result in excessive grain growth which will appear as an orange peel effect during subsequent working or polishing. To prevent this, the reduction in cross-sectional area between anneals should not be less than 30 percent. Over-annealing may cause a heat etch pattern to develop on the surface of the metal, when the grains of the metal become clearly visible. This effect can be caused by heat treating for too long or at too high a temperature. In general, over-annealing is undesirable, particularly if the metal is to be subjected to a subsequent bending operation. Occasionally, however, the effect of "heat etching" resulting from over-annealing may be used intentionally as an attractive decorative feature on a finished article.

Cooling. Platinum alloys do not age and can be cooled in air or quenced from the annealing temperature without harm.

CONTAMINATION

Platinum will combine readily with most molten metals, and this property is often used to produce alloys with controlled physical characteristics, as in the alloys of platinum with gold, nickel, copper and iron.

However, small additions of certain elements will cause undesirable properties. For instance, the formation of a low melting point intermetallic phase occurs when small amounts of aluminum, lead, or tin are picked up by platinum. Intercrystalline cracking at grain boundaries can be caused by arsenic, boron, silica, magnesium, or silver contamination.

This risk is more obvious when the contaminating materials are present as elements. It is not so obvious when the contaminants result from such operations as the filling and drilling of some semi-precious stones or some of the naturally occurring minerals which are mounted in platinum settings, or even other pieces of work being handled on the same bench.

The combination of these elements with platinum occurs on heating. It is essential, therefore, to avoid trapping contaminants in the metal during fabrication and to ensure that the surfaces of the metal are clean before annealing or soldering. It is also important to ensure that materials used to support the metal during heating are kept free from contaminants.

If contamination of platinum occurs, there is no practical way of curing the problem except by cutting away the contaminated portion and replacing it with a new piece of platinum. Attempts to solder cracks or to re-weld broken wires which have become contanimated will not usually dilute the impurities to a harmless level and further heat treatments will only result in spreading the contamination.

CASTING

Because of their high melting points, platinum jewelry alloys must be melted in bulk using oxy/hydrogen torches or high frequency induction.

The metal should be melted in a refractory crucible, no flux or gas cover being necessary. Because of the high rate of heat loss from the melt, it is essential that the casting temperature be considerably above the melting point of the alloy in use. This ensures complete filling of the mold.

Always provide adequate extraction facilities when casting to remove any fumes given off during melting.

TEXTURED SURFACES

Textured surfaces are increasing in popularity, particularly in designs for wedding and dress rings. Platinum is ideally suited for this type of surface finish because it sets off the polished metal areas to advantage.

Diamond machining is not recommended for platinum since it may result in rapid wear of the diamond.

Methods of texturing surfaces include knurling, vapor blasting, heat etching, criss-cross, and rough polishing. This wide variety of finishing techniques, used singly or in combination, provides an unlimited range of surface textures for all types of platinum jewelry.

SOLDERING

To achieve satisfactory soldered joints in platinum articles, there are several basic principles of sound soldering practice which must be met, namely: (1) The design must lend itself to soldering; (2) The parts to be soldered must fit closely and accurately; (3) The correct solder must be selected.

The most common technique for soldering platinum is by means of a fine torch because this lends itself best to the small shapes generally involved. The traditional gas mixture for torch soldering is gas and compressed air, and this can be employed in soldering platinum. However, gas mixtures such as oxy/hydrogen are preferred and are now commonly used in many workshops since they can cope more easily with the relatively high temperatures involved.

Particular attention should be paid to the design of any jig used to support parts during platinum soldering. This is especially true when using the high melting point solders. Any part of the jig that touches the work near the joint should have as low a thermal capacity as possible or the work may not reach soldering temperature quickly enough. This often leads to overheating.

When using conventional solders, flux should be applied to the joint before, or soon after, heating has commenced in order to ensure good wetting. Other solders can be used successfully without flux. For best results the solder should be applied to the joint as soon as the joint has reached soldering temperature and not before. If this is done, the solder will immediately flow where it is required. Heating should be stopped as soon as the solder flows into the joint.

When a furnace is employed for soldering, the solder must be preplaced and should be positioned so that it does not melt before the joint is hot enough to accept it. If it melts too early it will run away from the joint gap.

CONFERENCES

The Society of North American Goldsmiths, the principle advocate of the interests of the American jewelry and metalsmithing artists and designers, will hold its annual conference in St. Louis, MO, June 8-10, 1978. The theme of the conference will focus on the changing scene for metalsmithing artists from the academic emphasis to the small business/survival emphasis. Speakers on the subjects of workshop related problems, financing, marketing, promotion, taxes, etc., will be featured. Panel discussions and lectures by those people who have already been successful in free lance work in industry and commerce will also be included. There will be two technical papers (topics to be announced at a later date) as well as an overview of the aesthetic conditions and developments in various parts of the world. Foreign participation is encouraged. For more information, write: Professor Heikki Seppa, No. 8 Price Ct., St. Louis, MO, 63132, USA.

ABANA's Sixth Annual Conference/Workshop, April 26-29. Conference fee of $50 per member and $75 per non-member. Held on the State University of N.Y. campus, Purchase, NY. Registration forms are available from the ABANA president, Roger Phillips, 30 Lookout Circle, Larchmont, NY, 10538, or Polly Siwek, University Affiliates, State University of New York, Purchase, NY, 10577.

San Francisco, CA, JC-K Sales Management & Motivation Workshop, August 23-24, Fisherman's Wharf Sheraton.

Toronto, Canada, 10th International Sculpture Conference, May 31-June 4, over 50 lectures, panel discussions, workshops, slide presentations, and open international forums, York University. For further information, write: 10th International Sculpture Conference, 55 Bloor St., West, Suite 1405, Toronto, Canada.

April 27-30, Scandinavian Gold and Silver Fair. A comprehensive fair which presents the entire Scandinavian production in gold, silver, pewter, copper and brass. For information, contact: Scandinavian Gold and Silver Fair 1978, Bella Center, Center Blvd., DK-2300, Copenhagen, S.

March 5-7, St. Louis Gift and Jewelry Show, St. Louis Gateway Convention Center, St. Louis, MO.

March 11-12, Mid-American Jewelry Show, Princess Olympia, Oconomowoc, WI.

March 12-15, Minneapolis Gift and Jewelry Show, Radisson Hotel and Center, Minneapolis, MN.

March 12-15, Philadelphia Gift and Jewelry Show, Benjamin Franklin Hotel, Philadelphia, PA.

March 12-14, Manufacturing Jewelers and Silversmiths of America Suppliers and Equipment Exposition, Hilton Hotel, New York, NY.

March 29-31, Manufacturing Jewelers and Silversmiths of America Suppliers and Equipment Exposition, Century Plaza Hotel, Los Angeles, CA.

March 28-April 1, Watch Material and Jewelry Distributors Association Annual Convention, Boca Raton Hotel and Club, Boca Raton, FL.

April 7-11, American Gem Society Conclave, The Fairmont, San Francisco, CA.

May 5-7, Florida Jewelers Association Annual Convention, Sarasota Hyatt House, Sarasota, FL.

May 5-7, South Carolina Retail Jewelers Association Annual Convention, St. John's Inn, Myrtle Beach, SC.

May 28-June 2, National Wholesale Jewelers Association Annual Convention, Arizona Biltmore Hotel, Phoenix, AZ.

July 1-7, Dallas Trade Mart Gift and Jewelry Show, Dallas Marriot Motor Hotel and Market Hall, Dallas, TX.

July 9-12, Southern Jewelry and Gift Show, Atlanta Hyatt Regency Hotel, Atlanta, GA.

July 22-26, RJA International Jewelry Trade Fair and Convention, New York Hilton and Americana Hotels, New York, NY.

August 19-21, Pacific Jewelry Show, Los Angeles Century Plaza Hotel, Los Angeles, CA.

September 3-8, Dallas Trade Mart Gift and Jewelry Show, Dallas Marriot Motor Hotel and Market Hall, Dallas, TX.

April 15-24, Sixth European Watch, Clock and Jewellery Fair, Basel, Switzerland. Close to 1200 exhibitors will display products from 13 countries. For complete information, write: European Watch, Clock, and Jewellery Fair, P.O. Box 4021, Basel, Switzerland.

March 12-13, Georgia Retail Jewelers Association Conference, sponsored by the Manufacturing Jewelers and Silversmiths of America, Atlanta, GA, Center City. Suppliers interested in exhibiting should write or call Exhibit Manager.

March 18-19, 1978 Michigan Jewelers Association's Convention, Dearborn, MI, Hyatt-Regency Hotel. Includes seminars by the Gemological Institute of America and a banquet. For more information, write: Charles Rice at MJ&SA, 340 Howard Bldg., 155 Westminster St., Providence, RI, 02903, 401/274-3840; Lee Davis, P.O. Box 626, Alta Loma, CA, 91701, 714/989-1998; or Dennis Goldfarb, Times & Life Bldg., 1271 Ave. of the Americas, NY, NY, 10020, 212/489-6001.

Feb. 23-27, Independent Jewelers Organization Spring Meeting, Hyatt Regency Hotel, New Orleans, LA.

March 12-14, MJ&SA Expo New York, New York Hilton.

May 22-26, RJA International Jewelry Trade Fair and Convention, New York Hilton, Hilton and Americana Hotels, NYC, NY.

Valencia, Spain, 13th International Fair of Art in Metal, April 9-16. Jewelry-Silversmith-Custom, Jewelry-Gold/Silver Work-Lamps and accessories-Artistic Bronzes, Watchmaking-Gift Goods-Machinery.

Division of Art at the Pennsylvania State University and the National Association of Handcraftsmen, with funding from the National Endowment for the Arts, will sponsor a four-day conference/workshop for craft administrators, May 31-June 3. Details are available from David Van Dommelen, 256 Chambers Building, The Pennsylvania State University, University Park, PA, 16802; or Mildred Lynch, Executive Director, Pennsylvania Guild of Craftsmen, 277 W. Beaver Ave., State College, PA, 16801.

May 31-June 4, 1978, 10th International Sculpture Conference, York University. For registration form, contact: 10th International Sculpture Conference, 55 Bloor St. West, Suite 1405, Toronto, Canada.

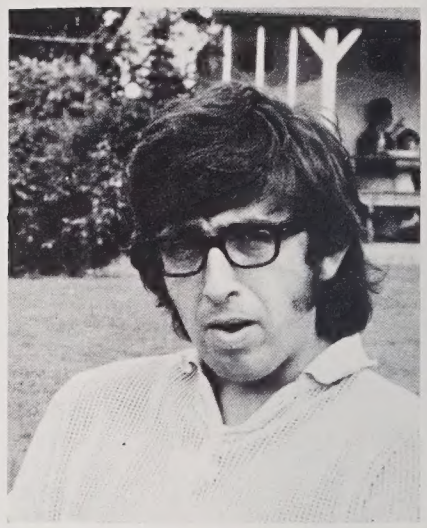
SOURCES

† Molykote metal protector provides protection up to 18 months or longer. It is easily applied, dries quickly leaving a clean, clear film. There is no need to remove the coating before assembling parts; although, if necessary, it may be removed with a chlorinated solvent. Surfaces to be protected must be clean and dry. Order from: Dow Corning Corp., Midland, MI. 48640, 517/496-4000.

† The Seabrook Jewelry & Lapidary Supply Co. carries a complete line of jewelry and lapidary supplies. Their stock includes: gold and silver in sheet, wire, and casting grain, tools, machinery and investment. For information, write: Seabrook, 135 Third St., San Rafael, CA. 94901, 415/457-4477.

† An excellent source of cabochon stones including moonstones in all colors, black star enstatites, black cats-eyes with a green ray, star rubies, and star sapphires and faceted stones including aquamarines, amethysts, citrines, and peridots, is Eastern Spectrum, P.O. Box 764, Evanston, IL. 60204.

JOHN WILLMIN
Autobiography



John Willmin

John Willmin, "Basic Pink I" , silver, white porcelain, 9" height

Brief Sketch of Designer/Sculptor
JOHN WILLMIN

Born: August 1943; lives in Aylesbury Bucks. Awards include: De Beers Diamonds International Award, Freeman of the Worshipful Company of Goldsmiths and the City of London; Visiting lecturer at Harrow School of Technology and Art. Has been featured in exhibitions in Great Britain, Germany, U.S.A., Canada, Sweden, Australia and Denmark.

Whilst flattered to be asked by SNAG to write an autobiography, my dominant feeling is that of concern for the fact that I am far from typical, either here in England or elsewhere. I was born in Robin Hood's Nottingham in 1943, some 300 yards from its Art College. Whether this was prophetic, I don't know, but I began my initial art training just south of it, at Leicester.

This first year general course was under a team led by an indefatigable man called Tom Hudson who demanded high standards of himself, staff and, very definitely, us.

It was to this course that I owe my involvement with sculpture in general and metalworking in particular. One of the lecturers was concerned with making large skull-shapes from mild steel sheet which he hammered into shape. His finish was immaculate and his control over his chosen medium, absolute. At a time when, in common with most students, one's ideas far outstripped one's capability to bring them about, this command and confidence with techniques seemed wholly unattainable. It was his influence, nevertheless, that determined that I would make objects from metal.

Towards the end of the course I decided to channel my sculptural inclinations into jewellery-making, feeling that the training in hand-crafting and the discipline needed would be of the greatest benefit in the long term. After all, it was only miniature sculpture (or so I thought) and more likely to produce a financial return (or so I thought)!

I applied for entrance at the Central School of Arts and Crafts, London in the jewellery design department. Whether they spotted a potential silversmith in my folio work or just had too many jewellers, I don't know, but they persuaded me to join the silver department and I agreed when they said that jewellery classes were available in the evenings.

It was this combination of instruction that I valued most at the Central, it enabled me to think either small or large and to combine the skills of (what are considered in England) two very different areas of activity. The tuition was very trade-based rather than artistic, but one did have the advantage of the advice of some very fine craftsmen.

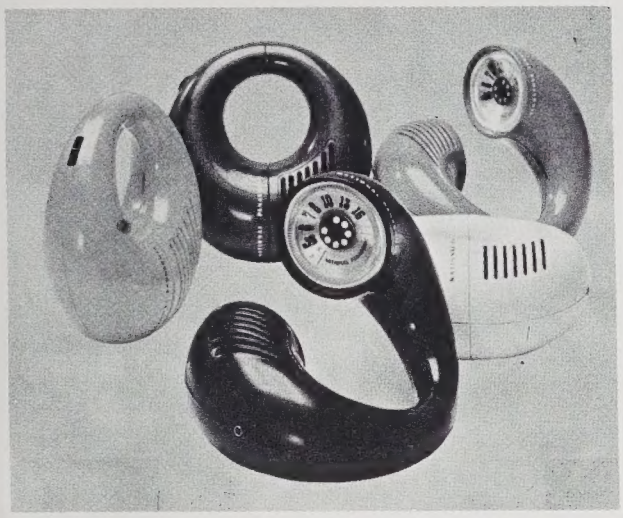
It was during my time at the Central that I began my association with the Worshipful Company of Goldsmiths, whose interest in the craft of gold- and silversmithing is as great now as it was in 1327 when it received its Charter. The student body as a whole entered competitions staged by and at Goldsmith's Hall. I was fortunate in winning prizes at the Arts Council Competition and a Traveling Scholarship from the Company itself. This latter, enabled me to visit Germany, France and Switzerland and also Denmark and Sweden, gaining valuable knowledge of how silverware and jewellery were designed, made and displayed.

The Central School Department of the year 1966 moved its location to a new building — the Sir John Cass College in the East End of London and I, in my final year, moved with it.

On leaving, after a total of five years at college, I began a small workshop with two friends (which I enjoyed), and teaching school children metalwork, to pay the bills (which I did not enjoy). I was unable to make large pieces of metalwork in this studio as it was three floors up and we only had small-scale equipment. We set-to with a will, however, furnishing every male we knew with cuff-links and earnestly encouraging them to marry so as to provide us with engagement and wedding ring commissions.

We spent a good deal of our time entering competitions and making work for exhibition etc. and it was about this time that I was fortunate enough to win a De Beers Diamonds International Award. In addition to this a radio design submitted to an

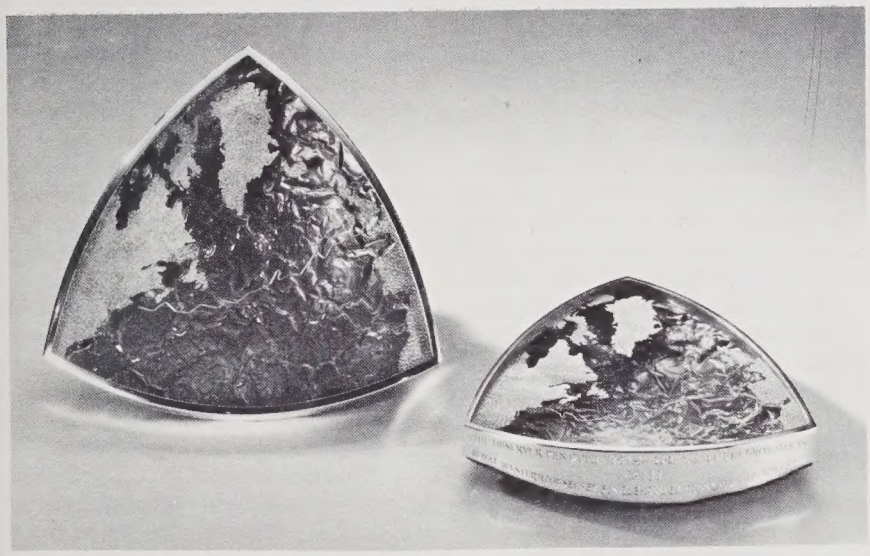
John Willmin, "Pilius Blue/Blue", silver, purple enamel, height approx. 24"



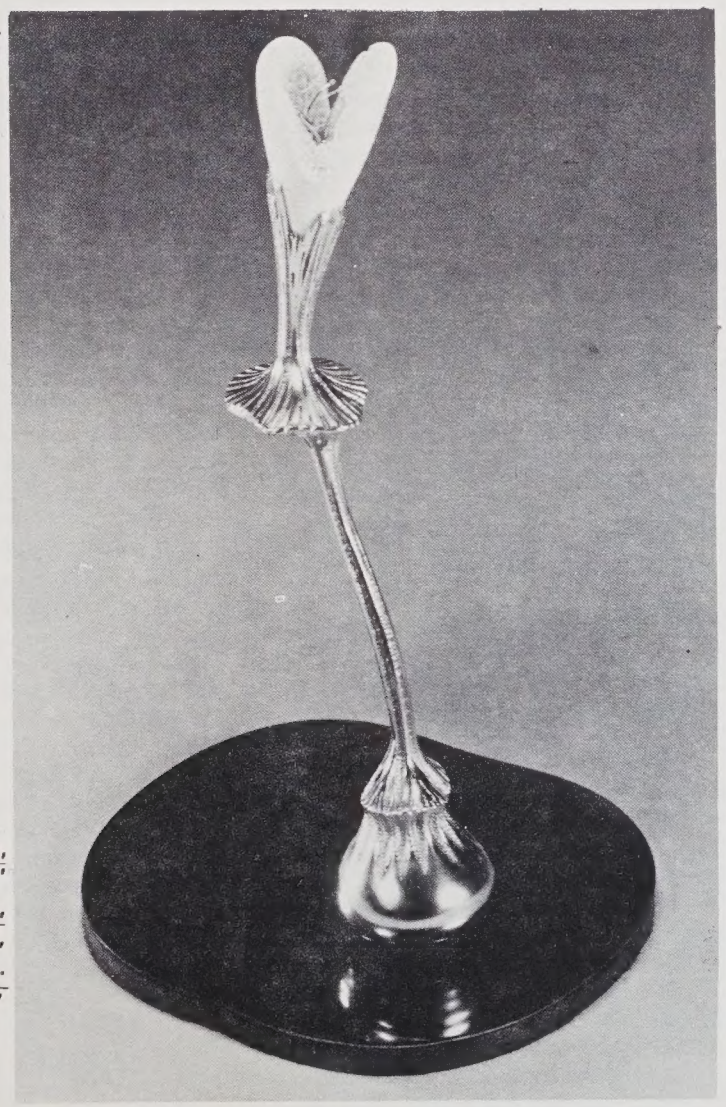
John Willmin, "Pauasonic R-72S band transistor radio", battery operated

exhibition at the Council of Industrial Design, London, was purchased and produced by National Panasonic of Japan. This was undoubtedly the largest bracelet I have ever designed!

Despite this encouragement I was never really happy making jewellery and decided to concentrate more on



John Willmin, silver and acrylic. 10"



John Willmin, Sapphro White 1' silver, ivory, silver-gilt, height approx. 14"

larger scale work. I had been asked to take part in the formation of a collection of modern silver by Johnson Matthey the bullion dealers of London, and I used this opportunity to overcome the problems of being a silversmith in a jewellery studio. My colleagues and I had long been making rings and pins etc., from small filigree units, soldered together in an open-work manner. This we achieved by half impressing the units into a modelling medium which had been shaped. This was removed and the units, (now half-held in the plaster) soldered. When the soldering was completed the plaster was cracked away revealing the assembled piece. Having no specific allegiance to either jewellery or silversmithing camp, I scaled up this process to produce the standing cup which was my contribution to the Collection. A very traditional object in many ways, it is, however, constructed of over 300 separate small pieces. As to finish—the whole surface was gilded and then polished back to the silver on the flats, leaving gold in the hollows.

Although this approach to construction did overcome many restrictions I still had to search hard for clients who could afford budgets for what is, after all, a slow and tedious process. I felt, also, that experimentation had to go on and could only go on in a workshop of my own — laid out my way — so when leases came up for renewal I broke away and moved from London. My wife and I purchased a late 17th century house in Buckinghamshire with an outbuilding which I have since converted.

The move was not only a physical but also a mental one as I felt that now I would have no excuse for not scratching the sculptural itch in the back of my mind.

In an attempt to do this, I made a series of plant-forms in a mixture of materials. These are, in every way, fantasy with no pretence of imitating reality but rather an analogy of the act of making and creating, of growth and existance. Unlike any commissioned work they served no ulterior function — they did not pour coffee, hold candles or adorn table centres. They, like true plants, grew slowly from diverse materials, rising over a period of time to a conclusion. However, I deliberately poised them on pools of dark bronze mirror glass, completing, thereby, their isolation and abstraction from living things. Their making allowed me time to delve into considerations of why I made the things I made. Whilst constructing them (I brought them all along together as a group), I watched and listened to myself, trying to understand the point of greatest excitement, the low points of boredom or dissatisfaction, where the sharp-focused mental image I wished to communicate dissolved into the softer blurred compromise which is so very often the finished object. I felt the need to establish whether making a piece of commissioned work was necessarily a different experience from that of making a piece for oneself.

For example, indeed by definition, my commissioned work is of a very social nature — by people for people with me as catalyst. The 'Observer' newspaper of London asked me to make their Singlehanded Transatlantic Trophies in 1976. As will be seen from the photograph, the trophies consist of the European coastline and the Eastern seaboard of the U.S.A., pierced out in silver and deeply embedded in acrylic. The top surface is smooth and gently curved whilst the underside is reticulated. The former was cast on a grandfather clock glass and the latter on crumpled silver paper. Whereas the engraved lettering tells the story in a bald sense, the keynote, as far as I was concerned, was to express each winner's own story in the route he alone took across the Atlantic. Hence the fine silver wire his trophy shows his course and no other — a personal momento of a personal feat.

Bearing in mind the above example, do I wear the same hat when finding visual solutions to problems initiated from outside, as the hat I wear when involved in something totally self-motivated? Is this merely expressing two sides of the same artistic coin or differing currency altogether?

Expecting no finite conclusions, I have, however, embarked on a re-evaluation which demands that both my commissioned work and my personal sculptural expression move forward together. It could be that, in the future, I may devote myself wholly to sculpture (the move towards silversmithing was, after all, only a means to an end). On the other hand it is perfectly possible that the two hats will sit quite comfortably, if not altogether securely, on the one head.

CONVERSATIONS ON SCANDINAVIAN HOLLOWARE

by Hans Christensen
(edited by Mary LaPrade)

"For some time now I have travelled during the summer to either see what is going on in the silver business or just to enjoy myself. I just came back from a visit to the Scandinavian countries. I noticed that there are not the same amounts of holloware sold as there was in the early fifties, but there has been a tremendous outburst in new designs and production. It seems to me they are trying to make a comeback in holloware. In Denmark for instance, 12 Danish silversmiths were invited by a bank corporation to make objects for an exhibition that later could travel around to the Scandinavian countries. And at that particular bank they are supposed to be very conservative; however, money was provided so that each individual craftsperson could buy any amount of silver he wanted to make these pieces. It was a nice show and did a lot to promote design in Danish silver.

"After I had talked to several silversmiths in Denmark, I took a trip up to Stockholm in Sweden. There I was very surprised by two groups of silversmiths. Each one of them had opened a store. One group had been going on for several years and was located in a very nice area of Stockholm. The whole store was filled only with holloware. I didn't see one piece of jewelry — at least not out in the open. It could be they had it in some drawers—that I wouldn't have noticed, but I spent several hours there. I talked with them about what they were trying to accomplish and they were saying — we're trying to bring back a holloware tradition. . .the idea of getting the family to buy things everlasting. During the short time I was in that store, he sold three pieces. I saw all three and they were very nice pieces.

"Then I went to another store which was again located in a very busy section. It was called Agum — Agum is the Latin word for silver and was very appropriate to use. This store was run by 12 people who lived in various parts of Sweden, but sent their silver for display and sale there. It was fantastic to see this. I talked with several of the people involved in it. Here again, most of it ranged from teapots to containers or bowls. Some of them were extremely clean; some of them were more decorative on the surface, but all of them were of high quality and craftsmanship. One thing I never did ask directly was how much they priced their works. There were two women who took care of the store. Of course some rent had to be paid. It was not an inexpensive store to run. The place was well furnished with cabinets, glass mountings and two big display windows out on the main street. All this could not be achieved by objects just sitting around. They had to be making sales. I can only verify from my own experience, there must have been somebody to buy it.

"I was invited to a meeting in another part of Denmark with three businessmen, not at all related to art. They gave me a very good proposition. They offered me an entire house for three months where I would have a shop and live. It was furnished and there was some equipment there, though very little. It was completely free to me, besides that — all the material I could use for three months, whether gold or silver. Conditions: They kept the pieces I made, but were not allowed to sell them. I could not accept for many reasons. I cannot travel back and forth with all my tools. I have only once and I hope I don't have to do it again. I gave the offer to another silversmith from Denmark—someone more likely to take them up on it. Nevertheless, a thing like this is going to affect the whole market. The various people I talked to while travelling felt the same way as I do. They recognize the need to bring back the holloware tradition, and agree that it holds great potential on the market in Scandinavia once again."

PUBLICATIONS

Gems and Minerals Magazine, 1 year—$6.50, 2 years—$12.00, 3 years—$17.00. Write Gems and Minerals, 1791 Capri Ave., Mentone, CA. 92359.

Catalogues are available for the "Philadelphia Craft Show" ($2.50) and "American Crafts 1977" ($3.50). These fees include postage. Write: Philadelphia Museum of Art, Philadelphia, PA. 19101.

Silver for the Gods, a catalogue which illustrates every object in this exhibition, $12.95 plus $1.00 postage. Write: The Toledo Museum of Art, Museum Bookstore, Monroe St. at Scottwood Ave., Box 1013, Toledo, OH. 43697.

Index to New Silver Technology 1974-1975-1976, $10.00. Copies of individual summaries are available at $1.00 per summary. Send check to: The Silver Institute, 1001 Connecticut Ave., N.W., Washington, D.C. 20036.

Craft Resources in the Federal Government, developed by Gerald Ely, U.S. Dept. of Agriculture. Includes a bibliography of crafts-related publications. Write: Gerald Ely, Farmer Cooperative Services, U.S. Dept. of Agriculture, Washington, DC 20250.

Cultural Directory: Guide to Federal Funds and Services for Cultural Activities. At a cost of $4, available from ACA Publications, 570 Seventh Ave., New York, NY 10018.

How to Start and Run a Profitable Craft Business. How to make money in crafts, handling legal aspects of business, how to find wholesale suppliers, etc. $6.95 for book, postage and handling. Ossi Publications, P.O. Box 141F, Fern Park, FL, 32730.

Fine Woodworking, John Kelsey, editor, The Taunton Press, Inc., publisher; $9 a year, $23 for three years. Write: The Taunton Press, Subscription, 52 Church Hill Rd., Newtown, CT, 06470.

Arms and Armor Annual, R. Held, ed. Over 680 photos and illustrations; softbound, $1.00 plus $1.60 for shipping and handling charges; NY and NJ residents includes sales tax. Write Publishers Central Bureau, Dept. 520, 1 Champion Ave., Avenel, NJ, 07131.

Metal Arts Guild, newsletter and membership. For information, write: Metal Arts Guild, P.O. Box 4507, San Francisco, CA 94101.

Northern California Enamel Guild, newsletter, membership. For information, write: Larry McClary, 3287 Walnut Lane, Lafayette, CA 94549.

Metropolitan Enamelist Guild, newsletter, membership. For information, write: Steven Zeitlin, President, Metro. Enamelist Guild, 176 Bleeker St., N.Y., NY 10012.

The American Jewelry Manufacturer, published monthly by The Manufacturing Jewelers & Silversmiths of America, Inc. Good source of literature, supplies, technical information, for the professional craftsperson. Subscription rate is $10. For information on how to order, write: The American Jewelry Manufacturer, Chilton Co., Chilton Way, Radnor, PA, 19089.

Contemporary Crafts Market Place 1977-1978, suppliers; shops and galleries; packing, shipping and other services; crafts organizations; periodicals and newsletters; audio-visual materials and their distributors; craft events and their sponsors; degrees and courses of study at colleges, universities and other schools; and reference books in all craft media. 8½"x11", 341 pages, $15.95 ppr. (includes postage). Write: R. R. Bowker Co., P.O. Box 1807, Ann Arbor, MI, 48106.

The Great Book of Jewels, by E.A. and J. Heininger; 206 full color plates; $24.95 plus $1.60 shipping and handling; NY and NJ residents include sales tax. Write Publishers Central Bureau, Dept. 520, 1 Champion Ave., Avenel, NJ, 07131.

Cloisonne Extraordinaire, William F. Alexander. 180 pages, information on old, rare, unusual work; includes section on Feberge, Japanese enamels, contemporary enamelists, $11.95, plus 60 cents postage and handling. Order from: W.F. Alexander, P.O. Box 45784, Los Angeles, CA 90045.

Sculptor's News Exchange, published by Johnson Atelier Technical Institute of Sculpture, 12 issues, $12.00/year domestic, $23.00/year foreign, air mail service. Order from: Editorial Office, 743 Alexander Rd., Princeton, NJ, 08540.

DON HAZELRIGG — 1925-1977

Don Hazelrigg was a metalsmith whose name may not be familiar to many of you, but the students that he guided and the citizens of east-central Kansas are much richer for having known him. He served on the faculty at Emporia State University, starting in 1962.

My contact with Don Hazelrigg started my junior year as he took over the metal program. His constant support, encouragement, and understanding was invaluable to me in this stage of my development. His approach to teaching was always fresh and creative. His critiques were honest and direct, but his nature was that of a good, kind person, so even the most severe comments were accepted because they were always made with the students' best interest in mind.

Gentleness and a sense of humor characterized this man. This was evident in his own art work as well as the bouncy gait of his walk. One of his deep concerns was the environment in which the visual arts existed. He did a great deal to promote the arts in the region in which he lived.

Don Hazelrigg gained the admiration of all his colleagues at Emporia State University and his fellow Kansas artist/craftsmen.

—by Richard Mawdsley

CRAFTS AS OFFICIAL GIFTS

(courtesy of Artist-Craftsmen Information Bulletin)

The National Endowment for the Arts hosted a meeting on November 19 to discuss the possibilities of American crafts as official gifts. Present at the meeting were Joan Mondale, whose interest in this subject prompted the meeting; Mrs. Cyrus Vance; and Ambassador Evan Dobelle, United States Chief of Protocol; with representatives from their staffs. Included in the meeting were David Searles, Assistant Chairman, National Endowment for the Arts; James Melchert, Director of Visual Arts; Elena Canavier, Crafts Coordinator; Florence Lowe, Public Information Director; Midge Burke, Protocol Specialist; Bess Abell, Executive Assistant to Mrs. Mondale; and Mary Ann Tighe, Special Assistant for the Arts to Mrs. Mondale.

THE ARTISAN'S LEGACY

by Susanne K. Langer

("The Social Influence of Design," *Who Designs America?* 1965)

In the past, particular cultures were built up largely by their artisans, who were craftsmen, and predominant feelings — not only emotions, but the pulse of work and of surrounding nature — recorded themselves in the design of weapons and implements as a general style.

In our world, the artisan has disappeared, but his responsibility has not. Someone has it, even if "someone" does not avow or discharge it. The artisan-craftsman has been superseded by the industrial designer; and industrial design is next to architecture in shaping the visual scene. So it is in our things — our countless things, multiplied fantastically *praeter necessitatem* — that we must find some significance: a look of simple honesty in ordinary utensils, of dignity in silverware, and of technological elegance in our machines.

If anyone else uses the Swest Therminder and has found themselves with a non-working one, check the relay on the inside. I sent ours back several times, and after many irritating delays, it still didn't work. The 24 volt relay is below the capacity that it should be and was burning out. The unit is a good one, and can be kep running by substituting a larger relay. I put a Porter and Brumfield, no. PRD3DUO-24 volt replacement in and now it works fine. The relay won't go on the circuit board, but it can be easily placed on the base of the cabinet.—Robert Mitchell

At the recent Longwood/Gainsbury conference, Diane Porzel mentioned that Kodax Celium toner is useful for obtaining a blue oxidation on metal. —Mary LaPrade

To give tomback, alpaka or any copper-nickel alloy a steel finish, polish the articles in the usual way, then clean in a potash solution and highly scratch-brush. Make a solution in proportion of two pints of distilled or rain water to six ounces nitrate of copper and one-fourth ounce nitrate of silver. Immerse the article in this and let dry slowly. Then heat gradually with gas or alcohol flame. The article will first turn to a green, then gradually turn to a dark color resembling steel. The pieces may be relieved by brushing to a dead or lively appearance.
("The American Jeweler", compliments of V. Beetler)

To make liquid metal polish, take 8 ounces of Spanish whiting, which must be perfectly free from grit, and put in one quart of gasoline. Shake up the whiting and gasoline thoroughly. You will notice the whiting settles immediately, leaving the liquid as clear as water. To remedy this, and further to make it a better polishing agent, add to each quart of the mixture 32 drops of oleic acid — no more, no less; shake again and the whiting will not settle. Apply to gold, silver, nickel, brass, glass or any kind of metallic surface with a piece of cotton flannel, rubbing well. Polish with a piece of same cloth.
("The American Jeweler", compliments of V. Beetler)

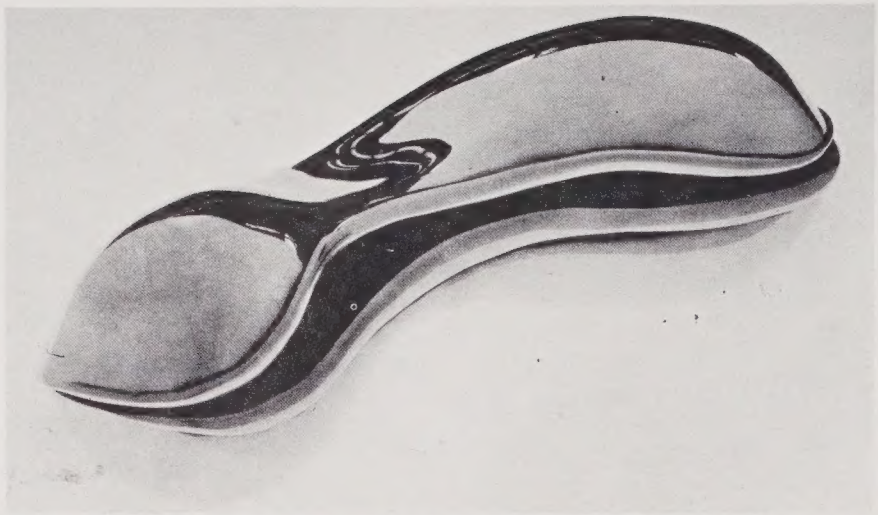
CHEAPENING THE PLATINUM OXIDIZING SOLUTION

For silver goods, either sterling or plain, there is no material equal to platinum for oxidizing. No current is required, but the solution is applied to the part which it is desired to oxidize with a brush and the whole then dried. As many coats as required may be put on. The color which is produced is not only dead black, but adheres tenaciously and withstands the action of any solution that is likely to be used for cleaning the ware. For oxidizing flat-ware, it is unsurpassed.

The ordinary platinum solution for this work is usually made up by dissolving sheet platinum in aqua regia (nitric and muriatic acids) and evaporating down until syrupy. This syrup is then dissolved in 100 times as much water so as to give a 1 per cent solution. As far as results are concerned, this solution leaves nothing to be desired, but it may be cheapened by the addition of iron.

Use equal parts of platinum and iron wire instead of platinum and proceed in the same manner as before. If the black oxidation which this solution produces is found too hard to relieve, then less iron should be added.

Part of the water, which is used to dissolve the syrupy chloride of platinum and iron which results after evaporation, may be replaced by alcohol, if a quick-drying solution is desired. The article to be oxidized should first be cleaned from grease in the potash bath and then scratch brushed. The platinum solution is then applied to the parts by dipping or a brush. If used for dipping, the solution should be warm. If a brush is used, the article is dried after the solution has been put on.—Brass World
("The American Jeweler", compliments of V. Beetler)



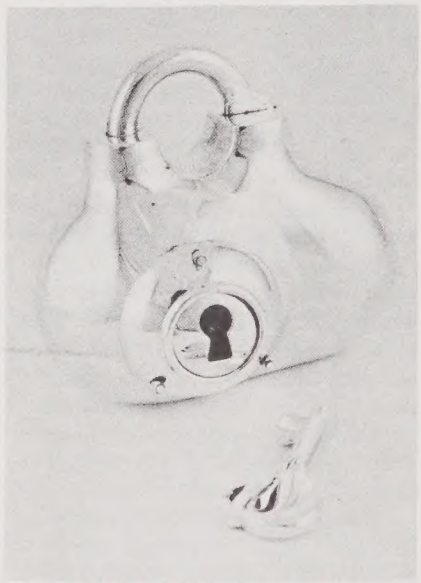
EAST TENNESSEE STATE UNIVERSITY

Elizabeth Saville, East Tenn. State U., sterling silver, 7"x2½"x2½".

Beverly Yokley, East Tenn. State U., sterling silver, pearl, comb, 3"x2"

EXHIBITION OPPORTUNITIES

Cedar City, UT, April 6-29, 37th Annual Cedar City National Art Exhibition. Open to U.S. Media: Ceramics, Sculpture, Jewelry, Metal, Glass and Weaving. Slide juried and awards. For information, contact: Thomas A. Leek, Chairman, The Cedar City Art Committee, c/o Braithwaite Fine Arts Gallery, Southern Utah State College, Cedar City, UT, 84720.



William H. Strickland, East Tenn. State U., "Padlock Vial with Key", silver, 3"x3"x2"

Deadline date: March 15; July 29-30, The 9th Annual Peters Valley Craft Fair. Application fee is $7, open to all crafts. Applications: write: Craft Fair, Peters Valley Craftsmen, Layton, NJ 07851.

Deadline date: May 1; 1978 Sterling Silver Design Competition. Entries should be packed with care and shipped pre-paid to Sterling Silversmiths Guild of America, 1111 E. Putnam Ave., Riverside, CN 06878.

Deadline date: July 15; Sept. 22-24, Indian Summer Arts & Crafts Festival '78; 19th annual festival at the Washington Co. Fairgrounds, Marietta, OH. For information: ISF '78, Arthur Howard Winer, Director, Marietta, OH, 45750.

June 20-21, Northeast Craft Fair, Rhinebeck, NY, open to trade; Dutchess County Fairgrounds. For further information, write: American Craft Enterprises, P.O. Box 10, New Paltz, NY, 12561.

August 9-10, Pacific States Craft Fair, San Francisco, CA; Ft. Mason Facilities, Pier 2; open to trade. For more information, write: American Craft Enterprises, P.O. Box 10, New Paltz, NY, 12561.

Slides due Jan. 20. June 15-30, Southeastern Crafts 1978, Berea, KY. All craftsmen in AL, KY, TN, SC, NC, VA, WV, FL, GA, MS, and LA are eligible. Write to Sally Wilderson, Chairman, Southeastern Crafts 1978, Art Dept., Berea College, Berea, KY.

Slides and entries due Sept. 9. Oct. 28-Nov. 26, The Seventh Marietta College Crafts National: A Competitive Exhibition of Crafts and Sculpture, Marietta, OH. For an application, write: MCCN '78, Grover M. Hermann, Fine Arts Center, Marietta, OH, 45750.

Entry deadline: April 21. May 12-June 11, The 11th Annual Prints, Drawings and Crafts Exhibition, Little Rock, AK. Artists born or residing in AK, LA, MS, MO, TN, OK. and TX are eligible to submit 2 entries with a $5 fee; details from Townsend Wolfe, Director, The Arkansas Arts Center, P.O. Box 2137, Little Rock, AK, 72203.

Deadline May 2. May 7-June 4, Enamels '78, Alexandria, VA; open to all enamelists using kiln-fired vitreous enamels on metal, glass or clay. For entry blank, send large SASE to Helen Ainsworth, 7717 Brookville Rd., Chevy Chase, MD, 20015.

July 23-August 24, The 50th Anniversary Exhibition of the Cooperstown Art Assn, Cooperstown, NY. Categories: Crafts, Painting, Sculpture; limit 1 entry per applicant; fee: $7.50 membership. Prospectus from Olga Welch, Exhibition Director, Cooperstown Art Assn., 22 Main St., Cooperstown, NY, 13326.

Deadline for submitting slides: Feb. 6. March 5-April 2, A Craftsman's Fantasy. Fantasy crafts in all media; no entry fee; 25% commission on sales. Details from Guilford Handcraft Center, Box 221, Guilford, CT, 06437.

June 9, 10, 11; Farmington Craft Expo; Farmington Polo Grounds, off Rt. 4, Farmington, CN. Outside booth, $60; tent space, $75.

July 7, 8, 9; New England Craft Expo; Topsfield Fair Grounds, Topsfield, MA, on Rt. 1, northwest of Boston. Outside booth $60, building space $75.

August 25, 26, 27; The Berlin Craft Expo; Berlin Fairgrounds, Rt. 72, Berlin, CN. Outside space $50, building space $70.

Beverly Yokley, East Tenn State U., sterling silver formed container, 5"x6"

December 1, 2, 3; The Christmas Craft Expo I; Hartford Civic Center, Hartford, CN. Booth fees start at $100.

December 8, 9, 10; The Christmas Craft Expo II; Hartford Civic Center Hartford, CN. Booth fees start at $100.

February 4 Deadline, April 8-May 21, 1978; The 11th Annual National Painting & Sculpture, Grover M. Hermann Fine Arts Center, Marietta, OH, 45750.

William H. Strickland, East Tenn. State U., "Cigar Box", silver, enamel, brass, copper, 3"x5"x7"

PRESIDENT'S REPORT
From the Board Meeting, January 20-22, 1978

European Exhibition

Dr. Fritz Falk, director of the Schmuckmuseum, Pforzheim, has agreed to show up to *20 pieces of holloware* along with the jewelry in the Society's exhibition opening early in 1979. Letters will be sent out about February 15 to all active pro-members outlining the selection procedure and inviting submission of slides for consideration. The deadline is **April 25** for members to respond to the Exhibition Committee. Tentative date for finished pieces will be September 1, 1978.

Book Department

A report from Hannelore Gabriel on our book department projects that the Society can stay even and offer a 30% discount on books over $5 to our membership. This will go into effect immediately.

Audio Visual Department

The report from Sandie Zilker on our AV department states that only 42 of the pro-members have responded to her letter requesting 3 recent slides to update the files — one of the craftsmen and two of recent work. It is possible that these slides will be used to accompany the European Exhibition to give a broad view of our organization, so it is hoped that we can have a 100% response. Please remember the very fine movie on our organization which we now have available for loan. An expanded list of slides available for rental will appear in a future issue of the Journal.

Conference

The St. Louis Conference will be held June 8-10, 1978. The agenda is still awaiting final personnel commitments, but the schedule includes a panel made up of craftsmen who have hired apprentices and bench workers, a representative of industry which has dealt with goldsmiths as designers, and a young goldsmith who has worked with industry as a designer. Other representations will include setting up a shop, setting up a retail business and hiring bench workers, working in a cooperative situation, and legal considerations concerning the goldsmith—taxes, insurance, record keeping, etc. There will be two technical paper presentations, a talk on colored stones, and a technical question and answer session. There will be an exhibition of recent pieces by pro-members—all to have been made specifically for this show. Also an exhibition of fine gems, a display by our book department which will include a selection of periodicals, a visit to the Washington University's metalsmithing studio, our annual business meeting, and, of course, assorted banquets and informal gatherings. Some nice surprises are still in the works — be sure to keep posted for the latest!

The Society will not be planning group flights this year. Members are reminded that very good reductions are usually available on excursion flights if the fare is booked and paid for 60 days in advance. Check with your local travel agent.

Advertisements

The Goldsmiths Journal will be accepting commercial advertisements. For a schedule of charges, interested parties should write Jim Meyer, 11713 S. Briarpatch Dr., Midlothian, VA, 23113.

Membership Lists

Due to our rapidly increasing membership and the paper work this involves, it has been decided to computerize our membership list. This will greatly ease the strain on our Boston offices, and alleviate the mix-up over dues payments. We will receive monthly updated lists from this system and these will be available to our pro-members upon request.

At present, we have 845 active members. This includes 90 pro-members, 392 associate members and 295 student members, plus 8 subscribing members (other non-profit organizations). Inactive membership totals 101.

ACC-Media Meeting

The ACC has called a meeting of representatives from each of the national media organizations. This meeting is to allow the organizations to become better acquainted with one another and to discuss ways in which all can cooperate. A report of this meeting will appear in a future Journal.

Conference for Apprenticeships

SNAG has also been invited to send an observer to the Conference for Apprenticeships being held April 14-16 at the State University of New York College at Purchase, NY. This is a plenary session for an international apprenticeship conference to be held in 1979.

Best wish to all of you,
Mary Lee Hu, President, SNAG
Art Dept., Michigan State University, East Lansing, MI, 48824

NEW MEMBERS

We would like to congratulate the following new pro-members: Merry Renk, Gail Larson, Stephen Bondi, Paulette Meyers and Patricia Daunis-Dumning.

We would also like to welcome the following new members:

ASSOCIATE. Richard Cunningham, Minnetonka, MN; Anthony Lugo, San Marcos, CA; Michael Oliver, Liberty, MO; Charles Cafarella, New Paltz, NY; Christopher Cornish, New York, NY; Joyce Atwood, Spokane, VA; Dorothy Schoettle, W. Memphis, AK; Marilyn Griewank, Akron, OH; Phil London, Melrose Park, PA; Timothy Sannaway, Astoria, OR; Ragnar Hansen, Australia; Ira Sherman, Denver, CO; Fred Rundell, Mt. Vernon, OH; John Jauquet, South Wales, NY; Penelope Borres, Marquette, MI; Gayle Saunders, New York, NY; Marga Kessimir, New York, NY; Metal Design-Art Dept., California State Univ., Northridge, CA; Kate Slater, Houston, TX; R. Schein Taylor, Ottawa, Can.; Jean Mandeberg, Olympia, WA; Stinn Handwrought Jewelry, Santa Maria, CA; Eve Alfille Park Forest, IL; Don H. Johnson, Doylestown, PA; Hank Kaminsky, Eureka Springs, AR.

STUDENT: Julie Pembroke, Tenino, WA; Antonia Christopher, Oakland, CA; Shirley Woodcock, Oswego, NY; Charles Robinson, Bloomfield Hills, MI; Ann Erbaches, Lawrence, KS; Colleen Archibald, Ann Arbor, MI; David Baird, Olympia, WA; Michael Miklos, Richmond, VA; Cathleen Bunt, New Paltz, NY; Nila Baider, New York, NY; Alison Howard Levy, New York, NY; Enid Kaplan, New York, NY; Dennis Gardner, Orange, CA; Steven Parker, New York, NY; Erica Zap, New Paltz, NY; Tracy Higgs, Madison, WI; Student Gov't. Assn., State University College, New Platz, NY; Mary Bangma, East Lansing, MI; Diana Francko, East Lansing, MI; Elaine Prieston, Ridgewood, NJ; Richard Branower, Tucson, AZ; Cynthia Frush, Tubac, AZ; Santokh Singh, Portland, OR; Laurie Ashbuch, St. Paul, MN; Ila Jean Keefer, San Diego, CA; Loren Gideon, Rochester, NY; Bob Schroeder, Melrose Park, PA; Atkins Lib Seris Dept., Charlotte, NC; John Reynolds, Boston, MA; Kenneth Millsap, Bonner Springs, KS; Rose Kalinowski, Bloomfield Hills, MI; Joyce Goldberg, New York, NY; Alice Cooley, Santa Cruz, CA; Hilary Jones, Tuczon, AZ; Bill Whitaker, Annapolis, MD. Frann Addison, Bloomfield Hills, MI; Ann Bowers, Richmond, VA. Robin Radford, Newtonville, MA; Bonnie Deutsch, Easton, PA.

John Dwyer, Ball State U., "Belt Knife", silver, brass, stainless steel ebony, amethyst, 5"x1"x1"

Beth L. Samuelson, Ball State U., "Bracelet Form", brass and black onyx, 3"x3"

Baltimore, MD, Feb. 17-19, 1978. The Civic Center in Baltimore is sponsoring the Winter Market of American Crafts, 10 a.m. to 6 p.m. each day. Will feature professional craftsmen east of the Mississippi and room interiors designed around crafts. For further information, contact: Constance Stapleton (301/371-7215) or Carol Sedestrom (914/255-0039). For ticket information, contact American Craft Enterprise, Inc., P.O. Box 10, New Paltz, NY 12561, 914/255-0039.

Raleigh, NC, Dec. 1-Jan 8. 40th Annual North Carolina Artists Exhibition, North Carolina Museum of Art.

Charlottesville, VA, April 14-16. Virginia Crafts Council Fair '78, University Hall, University of Virginia.

Asheville, NC, July 10-14, Craftsman's Fair of the Southern Highlands, Civic Center.

Knoxville, TN, Oct. 17-21, Craftsman's Fair of the Southern Highlands, Civic Coliseum.

May 20-21, 8th Annual Worcester Craft Fair, Craft Center, Worcester, MA.

May 6-7, "Midwest Craft Festival", Northbrook Court, 620 Lincoln, Winnetka, IL, 60093.

April 16-28, Saenger National Jewelry & Small Sculpture Exhibit, University of Southern Mississippi, South Station, Box 5345, Hattiesburg, MS, 39401.

April 8-May 22, The Marietta National '78 (formerly Mainstreams), 11th Annual Marietta College National Competitive Exhibition of Painting and Sculpture, Grover M. Hermann Fine Arts Center, Marietta College, Marietta, OH, 45750.

March 1978, Arrango International Design Competition, Miami, FL. Subject: durable eating implements. Write: Arrango International Design Competition, 8790 S.W. 131st St., Miami, FL, 33176.

Winnetka, IL, American Metalsmiths, Jan. 10-Feb. 25. For information, write Synopsis, 931 Linden Ave., Winnetka, IL, 60093. 312/446-8340.

Delft, Holland, COSA (National Arts & Crafts Exhibition), Feb. 2-March 1, R. Brandt and M. Vulinghs, ceramics; F. Letterie, sculpture; and J. Scherjon, jewelry. For more information, write COSA, Oude Delft 183B, Delft, Holland.

Vienna, Austria, Jewelers from Pforzheim, Jan. 16-28; Jewelers from Poland, Jan. 30-Feb. 17, Gallerie om Graben.

Melbourne, Australia, Australian Crafts, Feb. 1-March 12, National Gallery of Victoria.

Melbourne, Australia, Victorian Colonial Crafts from the period 1821-1919, National Gallery of Victoria, Write for further information to Ministry for the Arts, 9th floor, 168 Exhibition St., Melbourne, Victoria 3000, Australia.

London, England, Annual British Exhibition of Fine Jewelry and Sterling Silver, April 9-13, Goldsmith's Hall.

Copenhagen, Denmark, Scandinavian Gold & Silver Fair '78, April 27-30, Bella Center.

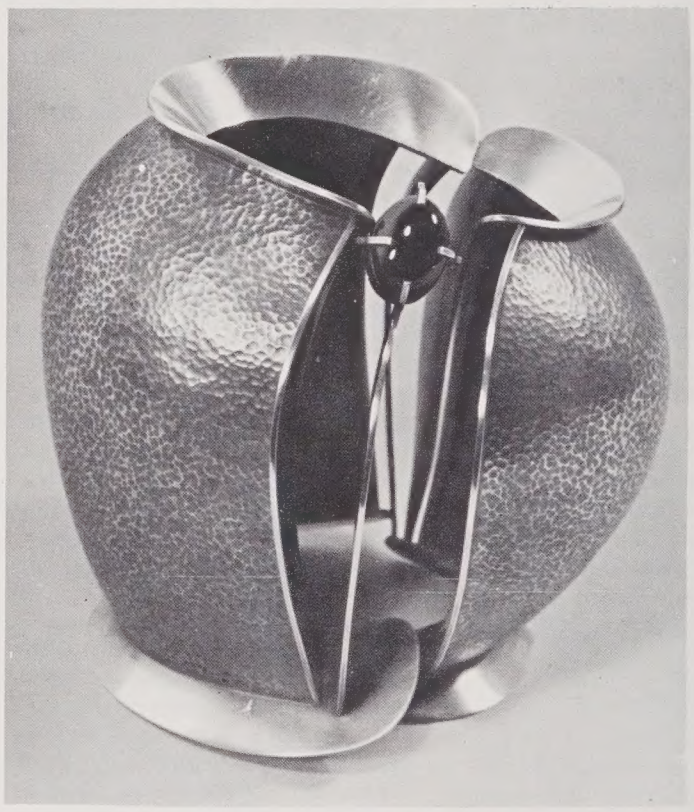
Brockport, N.Y., Metals '78, Feb. 6-March 5; 45 metalsmith invitational; Fine Art Gallery, State University College.

Jonesboro, Arkansas, Metal/Jewelry Invitational; Feb. 14-March 7; Art Gallery, Arkansas State University. Work by Bagnal, Evans, Shirk and Baldridge.

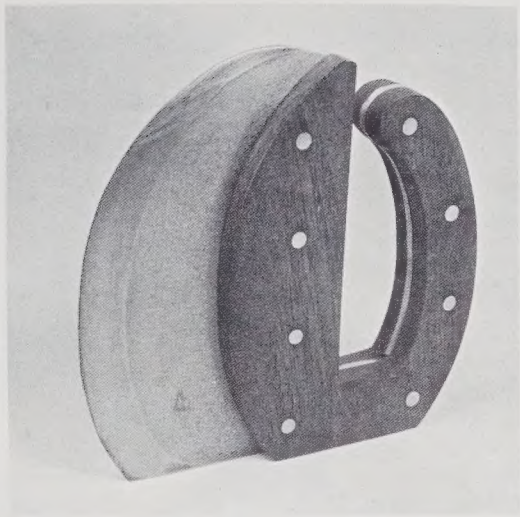
Oneonta, NY, Metal Art Exhibition, March 8-April 7. Thirty to forty SNAG members are being contacted for inclusion in the planned exhibition, Fine Arts Gallery at SUNY College.

"Treasures of Early Irish Art: 1500 B.C. to 1500 A.D.". The National tour began in mid-January at the Metropolitan Museum of Art in NY. From NY, the exhibition moves to the de Young Memorial Museum of San Francisco, where it will stay from Feb. 21-May 21. Later dates are as follows: Museum of Art, Carnegie Institute, Pittsburgh, PA, June 28-Sept. 24; Boston Museum of Fine Arts, Oct. 24-Jan. 21, 1979; Philadelphia Museum of Art, Feb. 26-May 27. The exhibition includes some 70 precious objects.

St. Louis, Mo.—"Around The Table", Aug 6-30, Craft Alliance Gallery.



Jo Dwyer, Ball State U., "Chalice", silver and acacia wood, 8½"x8"x4"



Michael Couch, Ball State U., "Cleavek", carbon steel and walnut, 6"x5½"

WORKSHOPS

Summit, NY, Feb. 12-March 5, Paper, Clay, Metal and Glass Exhibition to be held at the Summit Art Center in Summit, NJ. For information, write: Summit Art Center, 68 Elm St., Summit, NJ, 07901.

Beth L. Samuelson, Ball State U., pendant with Roman chain, silver and moonstone.

BALL STATE UNIVERSITY

St. Louis, Mo.—"Metals in Motion" March 5-29, Craft Alliance Gallery. Sculptural forms and jewelry by John Baltrushunas.

St. Louis, Mo.—"Media Mix", July 3-Aug. 2, Craft Alliance Gallery.

San Diego, CA, Feb. 15-March 17, Enamel Guild: West First Member Juried Show, Jewish Center Gallery, 4079 - 54th St., San Diego.

Washington, D.C.—"William Harper Enamel Art", Nov. 24-March 26, Renwick Gallery.

New Haven, Conn.—National Metalsmiths Invitational, March 5-April 15, Creative Arts Workshop, Inc.

St. Louis, Mo.—"Metal & Clay", May 7-31, Craft Alliance Gallery. Includes work by Eleanor Moty.

University Park, PA, July 1-20, '78. "Objects of Play", Chambers Gallery, The Pennsylvania State University; toys, games, puzzles, and other playthings created by American craftsmen.

Charlottesville, VA—Raising Workshop by Jim Meyer, March 4&5. $30 (non-members), $25 (members). Sponsored by Virginia Crafts Council. Contact: Mary Maher, 717 Rugby Rd., Charlottesville, VA, 22903. Phone: 804/295-6360.

Peters Valley Craftsmen offers 10-13 week internships (individual instruction) in jewelry/metalsmithing during the fall, winter & spring. The spring session begins April 3. In addition, weekend and summer workshops are offered in metals, blacksmithing, and other craft areas. For more information and applications, write: Peters Valley Craftsmen, Layton, NJ, 07851 (call: 201/948-5200).

March 11-12, National Metals Invitational, Gene & Hiroko Pijanowski, The Creative Arts Workshop, 80 Audubon St., New Haven, CN. A lecture will be given March 11 at 7:30 p.m.

July 20-August 18; Danish Goldsmithing and Silversmithing Workshop and Tour, Dr. Robert Coleman, Holst Anderson and Ellen M. Broker, University of Copenhagen, Denmark. Workshop is for experienced craftsmen; submit 5 slides or photos; cost $1420, For information write: Dr. Coleman, Art Dept., San Jose State U., San Jose, CA, 95121.

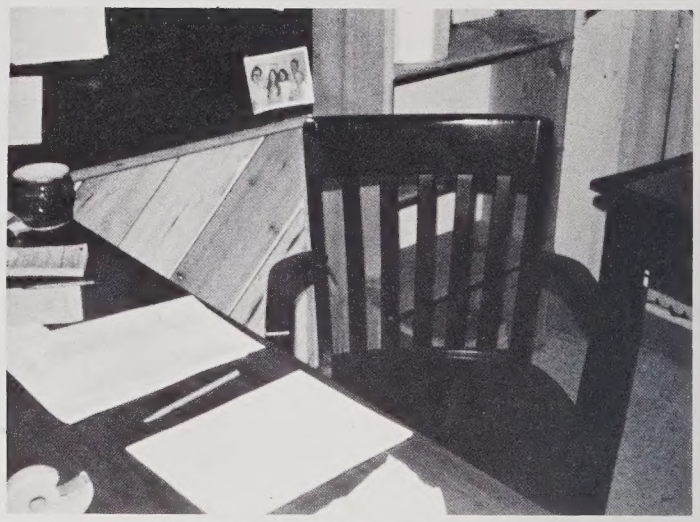
1978 Workshop Series for Retail Jewelers, sponsored by Jewelers Circular Keystone. Categories include: (I) Inventory Control and Management: Atlanta, Jan. 13-14; NYC, Feb. 3-4; San Diego, Feb. 13-14; Dallas, Feb. 17-18; Toronto, Mar. 19-20; Miami, April 3-4; Mackinac Island, June 11-12; NYC, July 18-19; Los Angeles, Aug. 15-16. (II) Sales Management and Motivation: NYC, Feb. 1-2; San Diego, Feb. 10-11; Toronto, Mar. 21-22; Miami, April 5-6; Bar Harbor, June 23-24. (III) Financial Management: Miami, April 7-8; Mackinac Island, June 9-10; Bar Harbor, June 25-26; Atlanta, July 7-8; NYC, July 20-21; Los Angeles, Aug. 17-18; San Francisco, Aug. 21-22. Write: Management Growth Institute, 572 Washington St., Wellesley, MA, 02181.

June 14-23, Electroforming Workshop with Stanley Lechtzin, Longwood College, Farmville, VA; graduate and undergraduate credit (3). Write for additional information to: Mark Baldridge, Art Dept., Longwood College, Farmville, VA, 23901.

Reticulation and Hollow Forms, May 22-June 2; Mokume, Lamination, Roll Painting, June 12-23; Photo Images, Graphics, June 26-July 7; Plastics Integration with Metals, July 17-28; Design Development, Aug. 7-18—These advanced jewelry making workshops are given by Harold O'Connor and will be conducted at Dunconor Workshops, Box 2000, Crested Butte, CO, 81224.

HB 2199

The 1977 Oregon Legislature recently passed HB 2199, making "One Percent for Art" a reality in this state. The program will be administered by the Oregon Art Commission with the cooperation of the General Services Administration. The law specifies that one percent of all funds for public buildings projects with budgets over $100,000 will be used for the purchase of art. For information, contact the Oregon Arts Commission, 835 Summer St., N.E., Salem, OR, 97301; phone: 206/753-3860.



INSIGHTS

by **MARY LAPRADE**

Forging the editor's name on insignificant correspondence. "You know, Louise, it seems to work better when I use a felt tip pen."

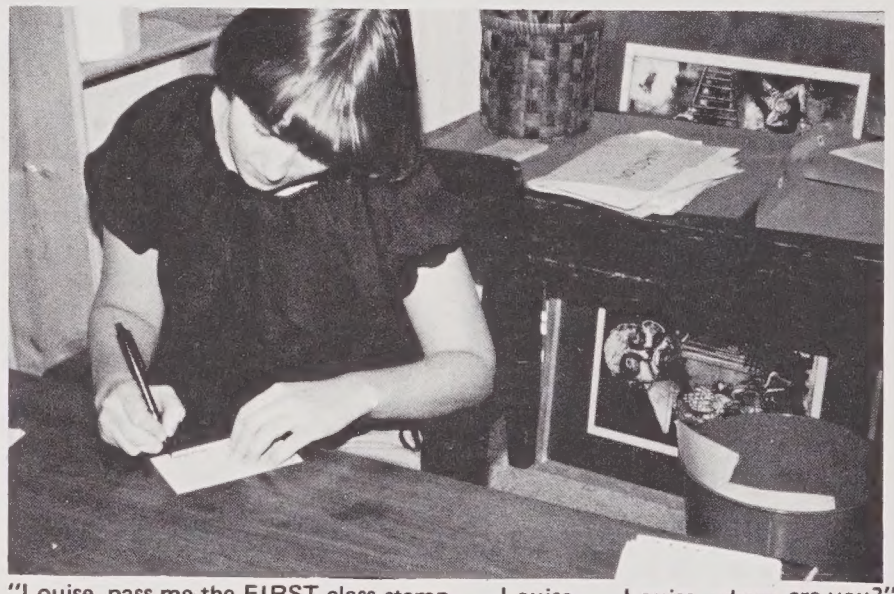
Among my many other duties, I was asked by Mr. Baldridge (that's Mark to all of you out in Readerland) to explain how the JOURNAL is put together. He thought such an article would be of interest to the SNAG members. I guess many of you do wonder "Whatever happened to my letter?", "Why have my photos never been returned?", and "For what reason have I not received the last five issues of the newsletter?" From such a perspective, this article might be of some value. Of course, in my position as "Chief Student Assistant", I am certain that my ever objective attitudes will shine through as I attempt to unravel some of the mysteries of GOLDSMITHS JOURNAL.

At present, the fort is maintained by a crew of six. First, there is the Editor and Boss—Mark Baldridge. Directly under his supervision are the two student assistants—Louise Bigger and Mary LaPrade who . . . carry out his orders. (Our work is part-time and done between classes; we average 12-15 hours a week.) And, recently returned to the force from student teaching, Ami Edwards is an old SNAG veteran. Elsewhere, in another building on campus, Pat Motley does the final typing of the material before it goes to the printers. And, though seldom at Longwood, Lynda Baldridge helps her husband at home with editing and layout. She also provides moral support and advice.

The long process which leads to the publication of the newsletter, begins at the desk of the Editor . . . where he edits the raw material. He attaches a special *Goldsmiths Journal* routing slip to the article and then marks the boxes for the appropriate action. Louise and I are ever mindful to STRICTLY obey the commands and to initial and date the action when completed. A typical instruction runs:

[ ] JOURNAL MATERIAL

PUBLICATIONS section
[ ] use as is
[X] retype
[X] reduce drastically



"Louise, pass me the FIRST class stamp . . . Louise . . . Louise, where are you?"

The various sections of the Journal: Book Reviews, Conferences, Editorials, Exhibitions, Films & Slides, Publications, Workshops, Helpful Hints, Lectures, Opportunities, Sources, New Members and Letters-to-the-Editor — all follow a particular format which is printed on the bottom of the routing slips. For example, the popular Exhibitions Opportunities column, which Louise and I fight over for the privilege of doing, should go: deadline date, date, name of show, address, misc. Generally we try to make any article in one of these sections as brief as possible. Various organizations and people are also asked to write articles or contribute information in these areas. Sometimes it is necessary to write other publications to obtain reprint permission on certain stories.

In addition to these general topics, the Journal sections of President's Report, Members' News, the Book Club and Interviews deal with more specific information about SNAG events and members. Each issue features one or more Biographies or Autobiographies of some professional member. Also included in every newsletter are such standards as: the Membership Application Form, Corrections, Notes, Contents, Staff and Journal Policy.

After a rewording and/or retyping of the raw material, it is then filed in either Correspondence, Publications, Current Journal Dead File, or the 'To Pat' folder. Another folder is kept for photographs. When the 'To Pat' folder begins to bulge, it is sent over to Pat and she types from our pages to produce the columns as they appear in the Journal. Louise and I receive her finished pages in batches which we proof-read. If anything needs a correction, we mark them with a blue-non-photo pencil directly on the copy and return to her. The next step is to cut the pages into columns with a border of 1/16". These columns are hot-waxed and backed on scrap paper to prevent the wax from sticking them together; they are then placed in a folder. Finally, a night or so before the printer's deadline, Mr. Baldridge carries home all the columns and photos where he and Lynda assemble it on special paper. (Notice each page of the Journal has two lines running about 1/3 of the way down from the top — a fat one and a skinny one. That was my first assignment when I began to work for the Journal — to draw 40 pages of those lines.)

With a sigh of relief, Mr. Baldridge delivers his copy to the printers in Appomattox. He is now ready to renew the entire process again. Once the baby Journals have been printed, then the arduous task of mailing preparation takes place. In former times (or in other words, since issue 13), the Longwood SNAG office was responsible for the labels. Now, however, the Wellesley, MA office sends for each issue a set of pre-sticky labels which includes the name and address of each current member. The reason for the changeover resulted when conflicts occurred between the lists of the Longwood and Boston offices. So, now if you do not receive your Journal you should blame it on the Boston office rather than us!

We still type approximately 100 labels a month though — for sending

Pat Motley, the final typist for the Journal, shown here doing — nothing!

Old GOLDDUST veteran, Ami Edwards

"Why does this machine always break down on the last page?"

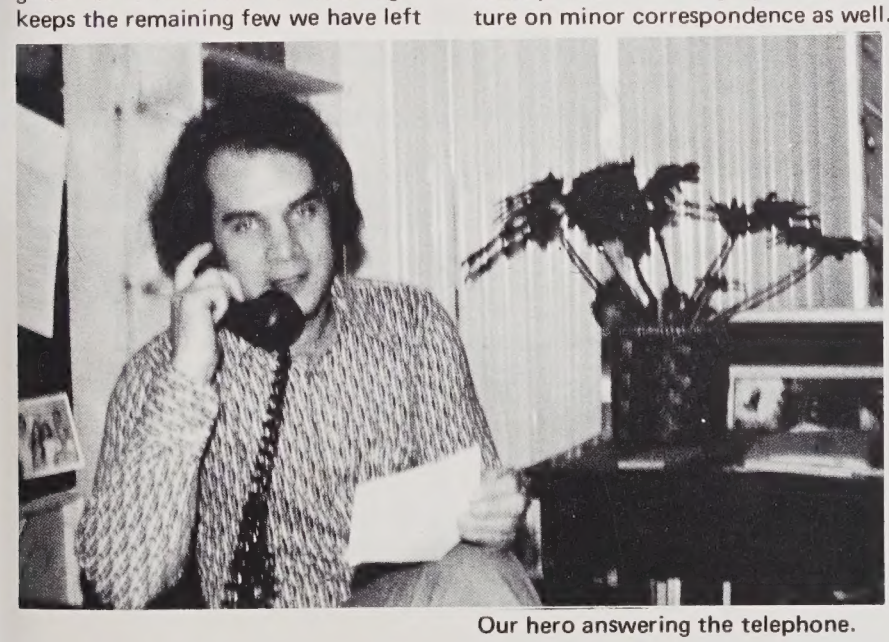
complimentary and back issues of the newsletter when requested. When all the labels have been attached and a small binder placed on the open side of the Journals, they are then stamped according to postage class. These have to be divided into sections of Bulk Rate, First Class, Third Class and Overseas Airmail. They also have to be arranged by zip code. There are always special notes to add on certain copies. All the newsletters are neatly stacked into boxes, the postage forms completed, and they are then lugged over to the Mail Room where we bid them goodbye. (At the Mail Room they are "bundled, bagged and tagged" and sent to the Post Office.)

In addition to typing and filing, Louise and I perform other chores in relation to the Journal's publication. One of our very favorite jobs is Xeroxing back issues of the JL (that's SNAG lingo for Journal). Usually, we do 24 copies of a particular issue at one time because of the discount rate at Duplicating for this amount. Since most newsletters run between 25-40 pages, it often takes an entire afternoon to do this. It is common for the Xerox machine to call for the Key Operator 15-20 times during the course of an afternoon. Both Louise I are experts at two-sided copying, and adding paper to the machine. We can even operate a collator. The reason for all this reproducing of Journals, results from the numerous requests for back issues. In fact, we no longer have originals for some issues. Mr. Baldridge keeps the remaining few we have left under lock and key — and it requires much stealth to convince him to surrender one over — even for Xeroxing.

Another duty of ours is to handle the correspondence between members, organizations and outside groups. To aid us, we often rely on form letters. From our Master File we are able to take out a letter and retype it, filling in the blanks with the appropriate information. Sometimes if there is a large series of the same message, without change, we will mimeograph duplicates. Of course, there are many occasions when form letters will not work and in these cases we write our own letters. These are reviewed by Mr. Baldridge and signed.

Louise and I also serve as a telephone answering service to our Boss. We have become very acquainted with some of his favorite 'hangouts' in the Art Building and are also quite adept at taking messages when he cannot be found.

Errands . . . I'm not surprised by anything that he might ask us to do. Directly following my assignment of drawing lines on the 40 pages, he suggested that I carry one of the broken typewriters downtown to be fixed. A later task included asking the school librarian for the address of *Viva Magazine.* (Embarrassed? Me? Oh no, of course not.) The purchase of office supplies, picking up films and photographs, checking his faculty mailbox, helping students find various tools and books, hauling lumber and cleaning are all routine. We have become proficient at forging his signature on minor correspondence as well.



Our hero answering the telephone.

When called upon beyond the range of duty, our services extend to taking pictures, waking up guests staying at the Alumni House during a metals conference, or cleaning up after SNAG parties, but of course, not on SNAG time.

Well, I hope you now understand the mechanics of producing an issue of the Journal. For my part, I would like to conclude with one final point—this article underwent extreme censorization by the Editor and will probably be the last writing assignment I shall be given!

Assistant Editor, smiling, etc. to provide moral support for Editor.

BOOK REVIEWS
by Chuck Evans

Beginning Jewelry Notebook
by Roger Armstrong
Kendall/Hunt Publishing Co.

Finally, a text geared specifically for the beginning student. Absent are the usual, sometimes vague pages on: electroforming, granulation, inlays, casting, engraving, mokume, enameling, etc. The author has obviously taught the beginner and from that standpoint knows well what to present, a thorough, detailed outline of the basics.

Beginning Jewelry Notebook was conceived to be a supplement to class lectures, demonstrations, etc. The text is printed on graph-like paper stock, has adequate room for class notes and is spiral bound. The pages are generously illustrated with clear line drawings.

As in any review, the reader can nit-pick with a critical eye and note a number of areas where he or she might not agree with or may have presented differently. No exception here. The sections dealing with hinges, catches, fasteners and stone settings are points which are not as precise, as well illustrated or technically accurate as might be. Chapter 10 "Metals", outlines the characteristics, weights, how to measure, alloys, temperatures, etc., of the various metals and should be presented near the beginning of the book.

In total, the book is well illustrated and points clearly made. Where a number of books give a rather superficial coverage of how to use the basic tools, the author goes into step by step detail and clearly shows their use. To illustrate one example of his thoroughness, Mr. Armstrong devotes four excellent pages of drawings and text to show the proper use of buffing equipment. This approach is consistent throughout the sections on tool use.

Beginning Jewelry Notebook reflects the author's intent to provide an understandable, well-illustrated supplement for the beginning jeweler. Where so many have missed, Roger hit the nail on the head.

Handmade Jewelry Techniques and Design
by ALISON RICHARDS
Funk and Wagnalls, N.Y.
$12.95

"From setting up a workshop to the problems of design, everything the novice as well as the advanced jewelry maker needs to know to create beautiful, original pieces of jewelry is presented in this clear and comprehensive handbook . . . thorough explanations follow on soldering, finishing, polishing, repousse, forging, stone setting, wire work, closurers, granulation, niello and casting." From the book's cover flap, written by the publisher, I suspect.

While several techniques are covered in great detail and clarity, the book as a whole simply doesn't live up to the cover statement. Realizing that size, number of pages or format is not really a valid criteria to judge a book, these factors do lead me to speculate why the publisher used 150 (7"x10") pages to present 75 pages worth of information. Most of the pages are half filled. Originally printed in Great Britain, the book's reprint in this country might account for the size.

Trying to sift through the text is like doing an I.R.S. long form. Paragraphs are broken by a myriad of bold black illustration numbers at the end of sentences directing the reader to illustrations on other pages. Given the size of the book's pages, this could have been avoided.

Personally, I find the errors in format design minor in relation to the handling of some of the technical portions. Without belaboring every area of concern, I'll point out a couple.

Of the sixteen pages devoted to Chapter 6, "Repousse and Forging", the author says this about forging: ". . .and lastly the shaping for forging of metal by beating it over a metal stake. . . .Forging includes beating metal into shape over a rounded stake, for example shaping a bangle round a steel mandrel; it also includes spreading the metal by beating with a steel hammer or against a steel support. . ." I suppose she is right — just beat it. A "clear", "comprehensive" and thorough presentation might mention the types of tools used to "beat" with, direction of the metal's movement or stretch, the need for annealing, etc., etc. Superficial coverage at best.

Filagree is covered in two paragraphs, granualtion in four without a clear indication as to what can be granulated to what. While one chapter is devoted to cuttlefish and sandcasting, the only evidence of contemporary technology is: "If you wish to cast work in large quantities it is worthwhile investing in some casting machinery. Casting machinery is sometimes available secondhand from jewelers or dentists".

From a monetary standpoint ($12.95), I could not make the purchase. From the standpoint of content, I would look elsewhere.

(Reviewer's Note: Having the opportunity to review books for the Journal places me in a unique position. Books are normally sent to me well ahead of the Journal's printing date which allows me several readings of each book and time to take a good look and to think about what is being printed and offered for sale. Most book buyers are not in this unique position; most don't have time or opportunity to examine what is offered and for the most part will take quick look, maybe are impressed by size or photographs and will spend their money. I would like to encourage our members to make every effort to spend time, examine what is offered and if satisfied, then buy. Before a purchase, check in public libraries, university libraries and in some instances ask the publishers for an examination copy.

I'm sure the Journal would appreciate your observations and comments on reviews and in all honesty to the authors and publishers, if you like, please offer a counter-review. A multi-view approach could stimulate a more beneficial dialogue.)

—by Chuck Evans

PUBLICATION ERRORS

In Pahaka's article, "Metalmorphosis", found in the last issue, there are several corrections:

ULLE LEPASAAR: The metalwork is basic and simple allowing the eye to be down to the subtleness and perfection of the colored stone inlay. (This sentence should read: The metalwork is basic and simple allowing the eye to be drawn to the subtleness and perfection of the colored stone inlay.)
They almost have a quality imaginable only in the finest metals. (This sentence should read: They almost have a quality imaginable only in the finest enamels.)
THOMAS MANN: I am a collegiate. (This sentence should read: I am a collageist.)

The following corrections should be made in the Biography of Heikki Seppa, "He Made His Own Toys", by Isabel Blase, Journal 14, Vol. III, No. 5, Oct., 1977, page 18. The paragraphs should read as follows, starting with the first paragraph, column two: "After several years, he moved. . .", "On the afternoon of their arrival, . . .", "Although he had to forgo his life's work. . .", "Then fate intervened again. . .", and ending at paragraph eight, column three, "Always industrious. . .".

CHANGES IN BOOK PRICES

"Contemporary Jewelry", by Philip Morton, cloth bound, is now $15.95; "Principles of Electroforming and Electroplating", is now $24.25.
— Hannelore Gabriel

MEMBERSHIP APPLICATION FORM — Complete form (or Xerox copy) and mail to: SNAG, 591 Washington St., Wellesley, MA, 02181.

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Check one and include check, made payable to SNAG (DO NOT include check if applying for pro-membership). To join SNAG it is not necessary to be a resident of North America.

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NOTE: If you would like to join SNAG as a pro-member, you must send 20 slides of your work in a plastic file folio along with your professional resume. Make sure your name is in or on slide folio and slides are originals or high quality duplicates since they shall become part of the SNAG Audio-Visual Library (if accepted as a pro-member). Pro-membership is juried. Criteria for judgment is [1] A firm commitment to the field of metalsmithing; [2] Evidence of high quality and design, creative ability, and technical competence; [3] Continuing active participation. Membership Committee consists of Alma Eikerman, Glenda Arentzen, Phillip Fike, Kurt Matzdorf, and Heikki Seppa. Deadlines for pro-membership jurying are March 1 and September 1.

SPECIAL MAILING FORM: Overseas members must pay additional postage to defray costs. Check appropriate box and include check with membership form.

[ ] $5 Seamail Overseas
[ ] $10 Airmail Overseas

North American members desiring first class postage, check box and include appropriate check.

[ ] $3.50

MEMBERS NEWS

Glenda Arentzen recently exhibited at the opening of the Aaron Faber Gallery, located on 5th Ave., NYC.

Katie Cleaver, Susan Cohan, Robert Ebendorf, Ulle Lepasaar, Barbara Minor, Hiroko and Gene Pijanowski, Lynda Watson, Toby Davis, William Harper, and Ginny Whitney are participating in "Landscape: New Views" at the Herbert F. Johnson Museum of Art.

Fred Fenster has been selected as a juror for the prestigious Winter Market of American Crafts, to be held at the Baltimore Civic Center.

Arline Fisch, Eleanor Moty, will be in the upcoming exhibition "UPDATE" at Slocumb Gallery, East Tennessee State University, Johnson City, in conjunction with the S.E. Regional ACC Winter Workshop and Assembly, Feb. 3-28.

Arline Fisch, Mary Hu, Lynda Watson, Bill Harper, Harold Helwig, Eleanor Moty, M.A. Scherr, Ramona Solberg, Heikki Seppa, Linda Threadgill, Gary Trentham, Glenda Arentzin, Tom Markusen, were among 100 craftsmen who contributed ornaments for the Vice President's Mansion in Washington, D.C. The ornaments will become part of the M.C.C., NY, permanent collection.

Bill Helwig participated in the Winter '78 ACC Southeast Region Assembly and Workshop, Feb. 3-5.

Mary Lee Hu, Helen Shirk, and Gary Griffen recently participated in the exhibition "The Makers: Fiber, Clay, and Metal" at the Department of Art, Georgia State University.

Don Johnson is participating in a two-man show with Adrian Van Schutelen (printmaker, Utah State U.) at the gallery, Idaho State U., from Feb. 6 to Feb. 17. He participated in an invitational craft exhibition at Salisbury State College, Salisbury, MD,

Claudia Keuhn, Ulle Lepasaar, Thomas Mann, Tom Markusen, and Thomas Reardon recently exhibited at the Elements, in a collection of holiday gifts in glass, metal, enamels, etc. The Elements Gallery For Fine Contemporary Crafts is in New York.

Marcia Lewis recently held a workshop at the University of Iowa, Nov. 17-19.

Marcia Lewis, Helen Shirk, Hal Ross, Lynda Watson participated in the Fiber/Metal Invitational Exhibit at the Boehm Gallery in San Marcus, California, during November.

Eric Martin has been appointed vice-president of the Jewelry Manufacturing Association of the Southwest. Mr. Martin also participated in an exhibition of work from 1973-77 at Lincoln College, Illinois, during Oct.

C. James Meyer gave a workshop at the Winter '78 ACC Southeast Region Assembly and Workshop, Feb. 3-5.

Harold O'Connor has had work represented in "The Creative Lapidary" by Frank Long '77, a gallery show at "Anneke Whatley Gallery," Keystone, Colorado, December 77, was nominated for inclusion in "Who's Who in American Art '78", and is a professional member of "The International Guild of Crafts Journalists, Writers, and Photographers."

Brigid O'Hanrahan received a grant from the California Arts Council (Special Projects Fellowship). The funds will be used to research the use of integrated circuits and leds (light emitting diods) in objects.

Pahanka recently completed a one-man show of "Flying Pins" at The Works Craft Gallery in Philadelphia, PA, in December.

Heikki Seppa recently participated in a master's workshop for advanced craftspeople, Jan. 15-21, entitled "Seminar '78". The workshop was conducted by the League of New Hampshire Craftsmen at LaSalette Seminary, Enfield, NH.

Douglas Steakley is currently having a one-man exhibition at the Seaside Art Gallery in Seaside, CA. He recently taught a workshop on holloware techniques at Santa Rosa Jr. College in Santa Rosa, CA.

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JOURNAL POLICY

Published bi-monthly by the Society of North American Goldsmiths, (SNAG), 591 Washington St., Wellesley, MA, 02181. Mary Lee Hu, President; Tom Markusen, Vice President; Joel Bagnal, Secretary-Treasurer; Board Members: James Meyer, George McLean, Mary Ann Scherr and John Marshall. SNAG is a non-profit organization for educational, scientific, and aesthetic purposes, concerned with fostering, encouraging and teaching the subject of metalsmithing. SNAG is registered with the Internal Revenue Service Sec. 501 (c) (3). Subscription (per year) is automatic with SNAG membership and individual issues cannot be purchased. Address membership and advertising inquiries to Joel Bagnal, SNAG, 591 Washington St., Wellesley, MA, 02181. Address unsolicited material to Editor, GOLDSMITHS JOURNAL, Art Dept., Longwood College, Farmville, VA, 23901. Material will be handled with care, but GOLDSMITHS JOURNAL assumes no responsibility for it. Since many letters received are of interest to the entire membership, unless specifically stated to the contrary, all received letters risk possible inclusion in the Letters-to-the-Editor section.

Deadline dates for submitted material shall be 30 days prior to issue date. Projected issue dates are: Feb. 1, Apr. 1, June 1, Aug. 1, Oct. 1, and Dec. 1

If you do not receive GOLDSMITHS JOURNAL within 25 days of the issue date (and if you are a member), please write to the Editor. GOLDSMITHS JOURNAL was initiated by a grant from the Crafts Program of the National Endowment for the Arts, to whom we are grateful for its continued support.

GOLDSMITHS JOURNAL assumes no responsibility for any products, sources, exhibits, information, etc., that is printed because of the diverse nature of our sources.

JOURNAL NOTICES

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Assistant Editor/Lynda Baldridge
Student Assistants/Mary LaPrade, Louise Bigger, Ami Edwards
Legal Staff/Alan Kaufman
Final Typist/Patricia Motley
Book Review/Chuck Evans, Marcia Lewis

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If you know of, or have on your staff, a talented art historian who would like to write metalsmithing/jewelry articles or reviews, please encourage them to do so. Also, please give us their names and addresses and we'll contact them. Thank you!

NEW LIBRARY RATE AVAILABLE

The GOLDSMITHS JOURNAL has a new subscription rate which is ONLY available for libraries. We encourage each member to recommend that your school library subscribe to the JOURNAL. Not only will this help offset spiraling publication costs, but it will increase student awareness of the JOURNAL (and it may make less wear and tear on your personal copy). The Library Membership rate is $15 and should be mailed to SNAG, 591 Washington St., Wellesley, MA, 02181. If first class postage is desired, an extra $3.50 should be enclosed.

ANNOUNCING JOURNAL TAPE SERVICE

We now have a tape/transcription service available for those members with ideas or thoughts to share, but without the ability to type or write well. If you fall in this category, simply tape your conversations and drop them in the mail. We will then type, edit and submit a copy to you for final approval, along with a replacement tape.

While this service was initiated to help increase the JOURNAL contribution level, please remember that articles submitted in finished form save SNAG both time and money. We hope to hear from you soon.

**FIRST CLASS—If you would like to have GOLDSMITHS JOURNAL mailed to you first class, send $3.50 extra per year to SNAG, 591 Washington St., Wellesley, MA, 02181 and so state.
The Boston SNAG office is now handling all requests for first class postage, changes of address and membership status. Prior to each Journal mailing, the Boston office mails us the mailing labels. Therefore, if you wish special first class mailing, if you move, or if you change your membership status, write: SNAG, 591 Washington St., Wellesley, MA, 02181, and THERE IS NO NEED TO WRITE TO THE JOURNAL!

**NEEDED—People to write small articles and reviews. If you have a special and/or interesting subject or specialty, please write GOLDSMITHS JOURNAL so that other members can share the benefits of your knowledge. We also need information, sources, helpful hints, etc.

**BACK ISSUES—Many people have requested back issues of GOLDDUST and the JOURNAL. Since most back issues are not available, Xerox copies of the material will be sent upon request. Copies date from Aug. '75 and continue bi-monthly. Send $1.50 per copy (to cover duplicating and postage) to Mark Baldridge, Longwood College. Do not send cash; send check or money order made out to SNAG.

**REPORTERS WANTED—If you are attending or hosting an exhibit, conference, lecture, etc., and would like to provide the JOURNAL with relevant information, please write us. We constantly need your assistance in collecting information.

**COMPLIMENTARY COPY—If you know of metal/jewelry people who might be interested in receiving one free issue of GOLDSMITHS JOURNAL, simply forward their name, address and zip code to the Editor.

**NOTE—During vacation periods, including summer, address GOLDSMITHS JOURNAL correspondence to Mark Baldridge, 1600 Otterdale Rd., Midlothian, VA, 23113, and NOT to Longwood College.

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